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Observations on the Employment of Blood-letting in the cure of Disease. By JAMES BONNAR, Surgeon.

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The use of blood-letting as a remedy in disease, from the frequency with which it is employed, as well as from the facility of its application, becomes a subject of important investigation to every medical practitioner. It is important in regard to the distant and more indeterminate changes produced in the animal economy, by a frequent or extensive application of it, as well as in its more immediate effects on the system, in arresting those morbid operations which constitute a state of disease.

It were idle to attempt to deny the absolute necessity of blood-letting as a remedy in many cases of disease, but there are also every day to be met with in ordinary practice, cases in which its employment is a matter of choice, and in which other remedies may be equally efficacious in restoring the patient to health, and at a less expense to the general system. Every practitioner must be aware, that many acute cases occur which are referable to no specific nosological arrangement, and in the treatment of which the choice of remedies must altogether depend on the discretion of the physician, from the impossibility of laying down any absolute rules, which can be applicable to every individual case of disease. Cases are every day met with, where acute symptoms prevail in a habit of body chronically disposed, or perhaps actually labouring under some specific disease, in which blood-letting to any considerable extent is altogether precluded, or at least strongly contraindicated. In such cases, the acute

symptoms may be so severe as to point out the absolute necessity for the use of strong measures, yet the extent to which it may be proper to carry them becomes a question of considerable nicety. The anomalous nature of diseases depends, in every individual case, on so many different circumstances, that any attempt at an enumeration of them would be needless. But a general character may prevail, pointing out a specific practice in the treatment of such cases. It is thus that much will depend on the prejudice or preconceived opinions of the practitioner, so that any attempt to ascertain the relative value of such a remedy as blood-letting is likely to be useful.

In every attack of acute disease, there evidently takes place an immediate attempt in the natural powers of life, to effect a removal of the existing evil, by means of a series of morbid actions. If those salutary operations do not interfere with the due performance of the functions of the animal economy, so far as to endanger life, a restoration to health is the natural result. But the means which nature employs is invariably productive of a certain degree of debility, proportionate to the extent of the existing disease, and the corresponding extent of those morbid means necessary to be called into action, in order to restore the patient to a state of health.

The duty of the physician is to assist nature in her salutary operations, and often to direct her in the choice of the means. The spontaneous efforts of the system, however, are often productive of the most imminent danger, and render the interference of the physician absolutely necessary, so far as to check those efforts and to substitute measures often of a very different kind. And laying aside the consideration of the danger incurred by leaving the case to nature, if the substitution of an artificial remedy be productive of a less degree of debility, or if by such interference the cure can be accomplished at less expense to the system, a great deal will be gained. It is thus that so potent a remedy as blood-letting becomes of inestimable value in the practice of medicine. It hence becomes a question of great importance in every case of disease, how far it is proper to interfere in the wholesome efforts of the system, and to substitute an unnatural remedy, such as the one in question, and to what exact length it may be proper to carry our interference. Much must depend in every individual case on the discretion of the medical attendant. These remarks do not apply to those cases so decidedly inflammatory, in which blood-letting as a remedy becomes a *sine qua non*, but to cases of daily occurrence, which exhibit no decided characteristics, but which, from their frequency, are highly important.

In this variable climate, a great proportion of the acute diseases met with in ordinary practice are cases of general excitement of the vascular system, attended by some local determination, producing what is called fever and inflammation; which determination may be in so slight a degree, as to warrant no specific arrangement of the case. I am also convinced that the larger number of those chronic diseases which afflict the human body owe their origin to an inflammatory condition, and are, in their first stages, diseases of excitement in the organs more particularly affected, attended by a general increased action of the heart and arteries, but which may for a considerable period be unattended by pain and other concomitants of inflammation; or those symptoms may exist in so slight a degree, as to lull the suspicion of the patient, and to elude the detection of the medical attendant. It is thus that many complaints are so far advanced in their progress, as to be beyond the reach of an effective application of medicine, before assistance be called; for it is well known that a morbidly increased action cannot continue in any texture of the body for any length of time, without at last destroying or in some measure changing the organization of the parts included in the morbid action; and consequently destroying or changing the healthy functions of the organ affected.

The early and decisive use of blood-letting in all inflammatory diseases is universally allowed to be of the greatest importance. The loss of a given quantity of blood in the beginning of an attack is of more utility in stopping the progress of the disease than the loss of a much larger quantity at a later period. To the reduction of strength occasioned by the larger depletion rendered necessary by procrastinating, we have to add the debility consequent to the longer continuance of the disease, laying aside the consideration of the danger to life resulting from an inert practice.

In cases where life is not immediately at stake from the limited extent to which morbidly increased action prevails, a choice is left to the practitioner to substitute other remedies, such as purgatives, diaphoretics, &c. But in every individual case, considerable discrimination is necessary; and I am inclined to recommend a more general adoption of sanguineous depletion in the beginning of diseases than is usually practised. In the beginning of a great number of those complaints resulting from the application of cold, a moderate bleeding is, in my opinion, to be preferred to purgatives, &c., when used with a view of lessening the quantity of the circulating fluids. Purgatives are excellent auxiliary remedies, and are of the greatest service when used to correct any derangement in the *primæ viæ*, which

might prove a source of irritation, and thus keep up the morbid action. But I cannot help considering a dependence upon them as a chief means of cure in diseases in which the action of the heart and arteries is much excited above the natural standard, to be a practice pregnant with the most imminent danger.

Inflammation in some textures of the body, is so obscure in the beginning, so insidious in its progress, and so rapid in its termination, that in all cases in which the physician hesitates respecting the necessity of bleeding, it is, in my opinion, a wise plan, to deprive the patient of the benefit of the doubt, and immediately to proceed to the operation. The insidious nature of inflammatory action is in no disease better exemplified than in enteritis. How often does it happen that a practitioner meets with a case which he conceives to be one of simple obstruction *of the bowels*, proceeding from previous neglect on the part of the patient, or perhaps he pronounces the disease to be colic, occasioned by the application of cold, or the presence of some improper article of food taken a short time before? In neither of these cases is the patient affected with rigors, the pulse is not much above the natural standard, or perhaps it is weaker than natural, vomiting does not prevail to any considerable extent, the tongue is only slightly furred, not dark to appearance, and only such as might occur in any ordinary case of sickness, and to a superficial observer the abdominal pain is not much increased by pressure. He treats the case by a frequent exhibition of purgatives and enemas; fomentations, and perhaps the warm bath is resorted to, without much benefit; still he assures the relatives that there is no danger. In the course of two or three days at the utmost, abdominal swelling, hiccup, cold clammy sweats, occur; in desperation he flies for the first time to the lancet, which now only serves to hurry on the fatal catastrophe. At length the black vomit comes on, and puts the nature of the case beyond a doubt, and the patient expires. It can only be known to the truly practical physician with what promptness it is many times necessary to have recourse to blood-letting, on the very first accession of disease. In some instances the continuance of increased vascular action for a very short period places the patient beyond the reach of medicine;—hence the great importance of decision in all those cases where there is the slightest suspicion of inflammation existing. A hesitating practitioner, who takes a few hours only to make up his mind respecting the course he is to pursue in the treatment of a doubtful disease, may often thus doom his patient to an irretrievable fate. I hold it as a maxim, that it is more culpable in a physician to lose his patient by neglect or indecision, when it might be in his power

to save him, than it is in one who hurries on the fatal termination by the use of desperate measures in a desperate disease. In these remarks, I keep entirely out of view those innumerable instances of inflammatory disease of every day occurrence, and in the treatment of which the merest tyro would be ashamed to hesitate.

There is a period in every disease, in which blood-letting has been employed, when the medical attendant asks himself how far it may be proper to stop in the use of the remedy, and to trust for the completion of the cure to the efforts of nature and the use of auxiliary measures, or to carry it still farther. An unnecessary loss of blood weakens the patient, and, it is supposed, induces a state of positive disease. But, in my opinion, stopping short of the quantity necessary to be lost, is by far the most dangerous side on which to err. The loss of a quantity of blood more than may be exactly necessary for subduing the morbid increased action, is in a healthy subject soon made up. The assimilating powers of the system provide, in a wonderful manner, to supply the deficiency, first in point of quantity, and then in quality, whereas a few ounces less than is necessary may render the loss of the quantity already taken away perfectly useless. However, a facility in deciding on the exact point where we ought to stop in the use of so powerful a remedy as blood-letting in acute diseases, is much to be desired, and it is that nice tact which cannot be inculcated by any rules, and is only to be acquired from actual practice and attentive observation, which stamps the superiority of one physician over another, and by some is never to be acquired.

In many inflammatory cases, it is truly astonishing to witness the great length to which it is sometimes necessary to carry blood letting before any evident impression be made upon the disease; and when its use is followed by a favourable termination of the case, the degree of debility consequent to so great a loss of blood is much less than could *a priori* have been expected. The effects of blood-letting in subduing the inflammatory symptoms are by no means in proportion to the extent to which it is carried, nor does relief at all keep pace with the quantity of blood detracted. A patient may be two, three, or even four times bled without the slightest abatement of any of the inflammatory symptoms, or even while he is undergoing the operation of depletion, there will often take place in fact an aggravation of all the symptoms of the disease, and it will not be till after the loss of a given quantity of blood, that any feeling of relief whatever will be experienced.

*Mrs. P., aged 45, who had had a large family, was some time

ago, without being previously indisposed, suddenly seized with severe spasms in the stomach. There was at first no increase of pain on pressure; pulse nearly natural; mouth parched, but no thirst. In the course of a very few hours, the spasmodic pain extended over the whole abdomen, which very soon became tender on pressure, particularly opposite to the stomach. Tongue streaked with a dark brown fur; she had alternate chills and heats. There could now be no doubt of the nature of the attack, and no hesitation respecting the plan of treatment to be pursued. The bleeding was repeated in a few hours, notwithstanding which, and the unremitting use of auxiliary remedies, the symptoms of the disease steadily got worse. The greater part of the abdominal contents seemed to partake of the inflammatory action. The stomach rejected her drinks almost as soon as taken, and she had an almost constant eructation of hot watery fluid from the stomach. Her bowels were obstinately bound up; the uterus was involved in the increased action. It seemed to be hard, and about the size of a large fist, and very tender to the touch. The pulse rose in frequency. Aided by the advice of Dr. Kellie of Leith, whose professional character stands deservedly high in the estimation of his brethren, the farther detraction of blood was persevered in, and the application of other remedies was at the same time unremittingly used, but without the slightest mitigation of a single symptom. In consequence of my having been called at the beginning of the attack, and from the early application of antiphlogistic remedies, the disease did not make that alarming progress which so often happens in abdominal inflammation. The same measures were persevered in for some days, without any appearance or even hope of subduing the disease, till one hundred and thirty ounces of blood were taken away, besides the loss sustained by the application of twenty leeches. At length abdominal swelling to a considerable extent occurred. The teeth and lips were covered with sordes; the tongue was deeply furred with blackish matter. No alvine evacuation had been procured, except in the smallest quantity, by the incessant administration of purgative enemata. In a state of the greatest anxiety for the safety of my patient, I resolved to risk one more decisive bleeding. There had as yet occurred no perceptible sinking. I had been bred in an excellent school, under some of the ablest naval surgeons, in a warmer climate, where prompt and decisive medical practice is of so much importance, and had often witnessed the salutary effects of large bleedings in inflammatory diseases. I made a large orifice, and at once took away forty ounces on the sixth day of the disease. My patient fainted for the first time, and so

completely, that for a few minutes, on considering the large quantity of blood previously lost, I was afraid that my patient would slip through my fingers. From that moment the disease was overcome, and my patient had afterwards no return of inflammatory excitement, rendering any further detraction of blood necessary. In this case I may remark, that from the very steady manner in which all the symptoms got worse during the first six days, notwithstanding the unremitting use of powerful antiphlogistic remedies, we have every reason to believe, that had it not been for the last decisive bleeding, the result would in all probability have been fatal. It appears that the quantity of blood taken away in a dangerous inflammatory disease, though very large, is still insufficient to arrest the progress of the morbid action, until some powerful effect be produced upon the nervous system at large.

In the case just related, the patient lost, in the course of six days, upwards of one hundred and seventy ounces of blood by measure, exclusive of the quantity taken away by twenty leeches. The debility, as might have been expected, was very considerable, but by no means greater than that which often results from a ten or twelve days continuance of a smart fever. Nor did there take place any oedematous swellings which systematic authors would lead us to expect as the frequent consequences of large bleedings. The catamenia returned in due course, within a week of the last bleeding; but the discharge was so void of colour, as scarcely to stain the linen. After blood-letting, the assimilating powers of the system seem to make up very soon the deficiency in point of quantity; but the supply of red particles is the work of a much longer period.

I should suppose that the instances are exceedingly rare in which death ensues as the immediate result of excess in blood-letting, but I can easily conceive, that, in a habit of body where particular idiosyncrasy of constitution may render the detraction of an excessive quantity rather a critical practice, and a suspension of the action of the heart and arteries may be so complete, the renewal of their functions may become a matter of considerable difficulty. It often happens, in cases of internal inflammations, that disorganization has already taken place, but without evincing itself by any evident symptoms so as to render it cognizable by the practitioner, who, in his anxiety for his patient, has recourse to blood-letting, after all possibility of its doing good is past, and in a very short period afterwards the patient dies, not from the loss of blood, but as the natural event of the disease; or, that the vital principle is so much exhausted by the continuance of the febrile excitement, that blood-letting hurries on the

fatal termination. In such cases, the relatives and attendants are apt, however, unjustly, to reprehend the practice of the medical attendant, even to the aspersion of his character. In justice to himself, it thus becomes a duty of every physician, more particularly in his practice in the uneducated class of society, to watch attentively the accession of mortal symptoms, before entering on a decisive practice in such cases as active internal inflammations, which are so rapid in their progress, and oftentimes so unforeseen in their termination.

In those diseases in which blood letting is applicable as a remedy, but its employment not absolutely necessary, and in which the having recourse to it is a matter of choice with the physician, I am decidedly of opinion that a greater degree of debility will be produced by leaving the case to the efforts of nature, aided by purgatives and a cooling regimen, than by the detraction of blood during the first days of the attack, and cutting short the disease by active measures, although both plans of treatment will be equally followed ultimately by a restoration to health. For example, in an ordinary attack of catarrh, in which there is no particular determination to any organ, but where there is only a degree of general febrile excitement, some days confinement to bed, and the exhibition of a few doses of purgatives, will be followed by a greater reduction of strength than would have resulted from the employment of one or two full bleedings.

I have already remarked, that morbidly increased action cannot possibly exist, even for a short period, and to an inconsiderable degree, in any texture of the body, without the risk of its producing a change in such texture, and in this manner laying the foundation of chronic ailments. Hence the great importance of cutting short, in every case, the stage of excitement. This is well exemplified in the case of rheumatism, the first stage of which is generally characterized by the presence of febrile excitement. And it is found, that the violence and the period of continuance of the acute symptoms will determine very much the severity of the subsequent chronic affection, and that the use of those active measures which are calculated to subdue the existing inflammation which prevails in the beginning of the attack, diminishes in proportion to the violence and the period of continuance of the chronic sequelæ.

P. Bruce, a middle-sized man, in the prime of life, was some time ago seized with an attack of acute rheumatism. The whole muscular system was so much affected that he could not be moved, and scarcely touched, without suffering extreme torture, and of himself he was so helpless that he required to be fed and lifted like a child. He had violent fever, and other concomi-

tants of inflammation. None of the viscera were affected.—The most rigid antiphlogistic remedies were resorted to, and he was in the course of four or five days blooded from the arm, six different times before the violence of the attack gave way.—Each time as the blood flowed, he expressed himself relieved. By the unremitting use of auxiliary means, the muscular pains went completely off, and in the course of a few weeks he was restored to health, the attack leaving no chronic affection whatever behind it.

About the same time, John Gardiner, a strong young man, about twenty-six years of age, was seized in a manner exactly similar. He was once largely blooded, which produced syncope ; but I could not prevail on him to submit again to the use of the lancet. The cooling regimen, purgatives, diaphoretics, &c. were afterwards used throughout the course of the disease. He was confined to bed in a helpless condition for a considerable time, and after the stage of excitement terminated, the case ended in a violent species of *sciatica*, which rendered him lame for many months.

In both, the violence of the attacks was much the same. At the termination of the acute stages, the debility in the first case was much less than in the second, notwithstanding the loss of nearly a hundred ounces of blood. P. Bruce was able at the end of a few weeks to resume his usual employment, while Gardiner was unable to attend to his business for a period of six months.

I am inclined to recommend the use of moderate depletion in rheumatic affection farther than is generally practised. I have often witnessed the beneficial effects of it, with the debilitated, and those a little advanced in life, when used with discretion in the beginning of rheumatic attacks, even when the febrile excitement was by no means great, and in cases in which it was not strongly contraindicated. It is much less debilitating, than the usual practice of sweating and blistering. However, I must except those in whom chronic rheumatism is habitual.

The debility resulting from blood-letting I rather apprehend to be overrated even by medical men. Every practitioner must be aware, that in all cases of overloaded circulation, the immediate effect of blood-letting is stimulant. Whether or not in febrile excitement the muscular debility which is so generally present, proceeds from the pressure of the blood upon the nervous fibrillæ, which are in contact throughout the whole system with the vascular ramifications, and which pressure is occasioned by the increased action of the heart and consequent increased impetus of the blood ; still the fact is evident, that blood-letting

in fever gives immediate strength to the patient, even when neither sensorium nor any of the viscera are particularly affected. This I have often witnessed in continued fever, where the patient required the help of others to enable him to get out of bed in order to undergo the operation, and immediately afterwards was able to return to it without the least assistance.

The facility with which the assimilating powers replenish the vascular system after excessive blood-letting, is truly astonishing. I have already observed, that the deficiency is in the first place made up in point of quantity, and afterwards the blood is improved in quality in a very gradual manner. The stimulus which intestinal absorption receives from the use of large evacuations, does not stop in its operation after establishing the natural degree of fulness of the vessels which existed at the beginning of the case, but goes on beyond the healthy point, and creates a condition of plethora or of overcharged circulation.—Hence the pernicious tendency of too great an anxiety to improve the strength, by the use of stimulants and tonics after an attack of acute disease. In all those diseases proceeding from a plethoric condition of the system, and which require the detraction of blood in greater or less quantity, in order to avoid immediate danger, a spare regimen cannot be too strongly inculcated during the period of convalescence. For from the cause assigned above, the necessity in such cases is but too apt to become habitual, and the more frequently it is had recourse to at distant periods, the necessity of repetition becomes more and more, and the intervals shorter and shorter, till at last a periodical loss of blood becomes absolutely necessary to the existence of the individual.

A most extraordinary instance of frequent losses of blood, and of the reproductive power of the animal system in supplying the deficiencies created, occurred some years ago in my practice. James Wishart, carpenter, a strong active man of 30 years of age, of a healthy constitution, was, in the summer of 1808, employed in cutting wood during a very hot day. After being much warmed with labour, he was exposed to a very heavy rain. He was seized, in consequence, with a violent attack of catarrh, for which nothing particular was done by way of medicine. He continued ill for a number of weeks, when the case ended in an abscess in the lungs. About two months from the beginning of the attack, the blood burst from his lungs to an alarming extent. He was now blooded from the arm for the first time, which had the effect of stopping the hemoptysis. The cough and expectoration of pus continued unabated, and he had every symptom of hectic fever. In the course of ten or twelve days afterwards,

the discharge of blood recurred. The hemorrhage must have proceeded from a vessel of considerable size, as the quantity lost in a very few minutes was very large, sometimes amounting to four pounds and upwards. Bleeding from the arm was again had recourse to, and had the effect of stopping the discharge from the lungs. He then felt tolerably well, and free from any bloody expectoration, until the circulating mass was increased, and the vascular system became again overcharged, when the same kind of hemorrhagic attack took place, and continued till the system relieved itself, or until he was largely blooded from the arm. Before the discharge from the lungs abated, it was sometimes necessary to use the lancet two or three times within the space of sixteen or twenty hours. Before the attack, he felt the whole system overloaded, particularly about the head; and his breathing was more oppressed. On watching his situation, he sometimes applied for relief, and was largely blooded from a vein, which had the effect of preventing the expected attack.—He thus continued to be liable to these attacks, at intervals of from ten to twenty days, for the period of seven years and a half, during which time he was blooded from the arm upwards of three hundred times. Towards the latter part of his illness, he became my patient; and notwithstanding every attempt to check the tendency to the formation of blood by spare diet, &c. and to moderate the action of the heart and arteries by the use of digitalis, I did not even succeed in lengthening the intervals between the attacks. During the period of his illness, the phthisical disease made no progress. The purulent expectoration was at all times very great; but he at no time laboured under great debility, excepting occasionally what might naturally be expected from the loss of a large quantity of blood. He was, for the most part, able to go about, and even to do a little work. At length, without any evident cause excepting perhaps his working more regularly, the pulmonic ulcer healed. He no longer required venesection. Every vestige of disease disappeared, and he is at this moment in perfect health. He was then about thirty-seven years of age. Before getting well, the intervals between the hemorrhagic attacks became longer and longer. At no time during his long illness had he any tendency to œdematous swellings, which may be perhaps considered as remarkable; for the quantity of blood lost, in a short period of time, was occasionally very great;—six or seven pounds within twelve hours. I never before knew of a case in which blood-letting was so often repeated, and where the disposition to the formation of blood went so completely off without the accession of some other disease which exhausted the system, or the occurrence of a discharge of blood

from a different part of the body, generally from the bowels, more gradual and more constant in its operation.

Systematic authors would lead us to believe, that dropsy and anasarca swellings are to be dreaded as frequent consequences, resulting from excessive depletion ; but I am inclined to think, that the risk has been much overrated, and that in those cases in which such things have taken place, they have oftener followed as the consequences of those diseases for which it was found necessary to use large bleedings, than as the effects of the remedies employed.

When serous effusion takes place in inflammatory affections of the brain and lungs, I apprehend it invariably happens as the immediate consequence of the increased vascular action of the parts affected, which constitutes the disease. And in no case was I ever deterred from using blood-letting when there was a prospect of doing good, from any dread of such occurrences taking place. I have often witnessed relief in breathing to follow a moderate bleeding in the last stage of pulmonary inflammation, even after an effusion of serum had to a certain degree taken place, which very shortly afterwards carried off the patient.

An inflammatory condition of a part naturally produces a laxity and an increase of diameter of the capillary vessels, which admit the passing off of a larger quantity of the serous part of the blood into the neighbouring cavities than what is natural, and more than what the corresponding absorbents are able to carry off ; hence the occurrence of watery collections. Those means, therefore, which are calculated to subdue the inflammatory action, are the best adapted to prevent and to cure such dropsical affections. In this manner, we may account for the success attending the employment of blood-letting, in those dropsies resulting from the application of cold, in which I apprehend there always exists, in the cellular texture of the parts affected, an inflammatory state, which is the immediate cause of the disease. In like manner may we account for the occurrence of anasarca swellings after scarlatina, and for the success of the treatment by depletion.

In those cases where the efforts of nature, by establishing a discharge sufficient to relieve the overcharged condition of the system, and thereby checking the local morbid affection, are proceeding in a salutary course, it is often a dangerous practice to interfere, by using so strong a measure as general blood-letting. For the outlet established by nature is generally nearer the seat of the disease, and is more powerful in its effects than any mea-

sure which we can employ by way of blood-letting, which can act only through the medium of the system at large.

Some time ago a gentleman was attacked with catarrh. The general fever was not great; pulse 82, and rather full. The chest appeared to be the part more particularly affected, but without the slightest degree of pain. Respiration was free and natural. On the second day, when I first saw him, expectoration had come on, and was free and copious. I was averse to the use of strong measures, and declined taking more than 14 ounces of blood from the arm, and he was put under the strict cooling antiphlogistic regimen. Next day a physician saw him and bled him largely, and applied a large blister to the chest, which treatment had evidently the effect of forming a degree of congestion in the lungs. The pulse rose till it reached 125; the expectoration almost entirely ceased; the breathing became hurried and laborious, and the patient was placed in imminent danger. There was now no alternative but to persevere in the detraction of blood, and it was found necessary to carry it to the extent of 90 ounces, before the violence of the disease gave way. The patient ultimately got quite well. What is worth remarking, the expectoration did not return. In a case such as this, I cannot help considering such interference to be bad practice. The state of the pulse, and the total absence of pain, certainly portrayed no considerable degree of inflammation; and from the occurrence of a free expectoration, there was reason to hope for a favourable termination to the case. I am inclined to think, that in a case of pneumonia or catarrh, a single ounce of mucus expectorated, or the transfusion of the smallest quantity of blood from the vessels of the part affected, will do more towards the reduction of the disease, than the loss of forty times the quantity of blood from the system at large.

There are many cases in which blood-letting is not expedient as a remedy, although it appear to be pretty strongly indicated, arising from certain irregularities of the circulation, in which it would no doubt give relief to the present feelings of the patient, at the same time it would protract the continuance of the case, and lay the foundation of much future life. In young female subjects with whom the menstrual discharge is not fully established, there often arise particular feelings and symptoms resembling those produced by a general plethoric condition of the system; and in fact there does exist in such cases a fulness of the vascular system, but not to the exact extent sufficient to enable nature to support health by the establishment of a discharge necessary to the due performance of the functions of the animal economy. That condition of the circulating system al-

luded to, which is preliminary to the full development of the female constitution, and which, to a certain degree, precedes every return of the catamenia, often exhibits symptoms very much resembling those of actual disease, but which are invariably relieved by the occurrence of the discharge. I am of opinion, that in such cases our interference, by substituting an artificial evacuation so powerful as blood-letting, is calculated to do much harm, by forcibly checking the salutary efforts of nature. In those cases, the unpleasant feelings proceed not from too great a fulness in the system generally, but rather from the current of the blood taking wrong determinations, producing a state in which it exists in larger quantity in one part than in another of the body, though at the same time the quantity generally may not much exceed, if at all, what is to be regarded as the healthy standard. Under such circumstances, the detraction of blood, by diverting the current from its proper channel, or, to speak more properly, by removing that degree of fulness or plethora which may be considered to be essentially necessary for the production of a salutary effect, and thereby preventing what is absolutely required for the due maintenance of health, will be productive of a state of actual disease. At that period of life when the menstrual discharge is about to be established in females, there is a peculiar susceptibility of the nervous system, which is much increased by any interference on our part by way of evacuations. And I have often had occasion to observe that the necessity of large depletion at that period has entailed on the patients a liability to a train of hysterical affections, and which has never wholly left them. I am unable to explain why at that time of life, the nervous constitution is more easily acted on by blood-letting; still the fact of its being so should make us cautious in having recourse to so powerful a measure, or indeed to any means whatever, calculated to interfere with the natural progress of uterine action. And moreover, the relief obtained by the use of powerful evacuants, from the uneasy symptoms occasioned by overloaded circulation, in a case of amenorrhœa, is temporary, and continues only till the next period of menstrual return, when the same feelings again recur; and if the same plan of treatment be a second time resorted to, a periodical necessity for blood-letting will be established, which afterwards will not be easily overcome, as every successive attack will more and more require the use of those depletory measures, which eventually will be found to undermine the general health, while, at the same time, the establishment of the natural discharge by the uterus, will be placed farther and farther off.

Systematic authors point out the appearance of the blood al-

ready taken away as a criterion by which we are to be directed in our practice regarding the farther use of depletion in the cure of the disease. But it is in my opinion a very uncertain guide ; for in all attacks of acute disease, those circumstances which give to the blood that appearance so well known under the name of the inflammatory coat, exist for some time after the force of the attack is broken, and the blood will not resume its natural appearance till some time after all necessity for farther depletion is past. The existence of the buffy coat upon the blood, whether as a proof of the presence of morbid action, or as it is found in particular states of the animal system, seems to depend entirely on an increased momentum and consequent increased temperature of the circulating mass, and perhaps also on some undefined change with regard to fluidity. I am much inclined to think, that the inflammatory coat will in no case be exhibited till an increased momentum is perceptible, and that no local inflammation will long exist in any part of the body without occasioning such increased momentum. The increased action in the heart and arteries in inflammation, seems to depend on a nervous sympathy which extends throughout the ramifications of the whole sanguiferous system. No morbid increased action can be supposed to subside all at once, however powerful the means employed may be. Under such circumstances, then, the continued exhibition of the buffy coat is no proof of the unyielding nature of an attack of disease, or of its not having already given way to the means employed. I even believe, that in a violent inflammatory attack, the practitioner may continue to bleed his patient to the dregs before the blood resumed its natural appearance.

The very frequent occurrence of inflammatory diseases, of late years, is often the subject of remark ; but I am by no means inclined to admit the truth of such a remark to the extent generally supposed. I have no doubt, however, that the changes which have taken place, of late years, in the manner of living among almost all classes of society, may have had the effect so far of making the prevalence greater of diseases of excitement now than in former times. But I am led to ascribe a much greater share of the belief, to the late improvements in medical nomenclature, and consequent improvement in the treatment of diseases. On looking back, not more than twelve or fourteen years ago, while I was in my apprenticeship, I recollect, that almost all acute diseases which occurred, went under the general denomination of fevers. Inflammation was a term never heard of in this part of the country, excepting in the case of a wound, or some other accident. Bleeding was a remedy almost

entirely proscribed in internal diseases. The mortality in all acute diseases was undoubtedly greater than at present ; still a very great number got well under a constant exhibition of Peruvian bark and half a bottle of port wine daily.

If the feelings of our patients were to be taken as a criterion of the propriety of our practice, we have ample encouragement to persevere in the employment of the depletory plan of treatment in many of those diseases in which blood-letting has of late been used. For, in epidemic fever, and the exanthemata, such is the relief experienced from a first bleeding, that I have in general not only found my patients willing to undergo it a second, or even a third time, if found necessary, but often they of themselves solicited a repetition of the remedy. For a long time after beginning practice in this part of the country, I found a strong prejudice to prevail against all powerful evacuations in all those diseases, which the people had been accustomed to call *fevers*, and also in all eruptive diseases, however violent the local affections might be. They submitted most willingly to blistering, and sweating, and purging. But these prejudices are now wearing fast away.

It cannot be denied, that the habits and modes of living which prevail in civilized society, are greatly calculated to increase the prevalence of diseases of excitement, as the certain consequences of pampered appetite and diminished activity in regard to exercise. A liability to disease depends in many cases more on the existing condition of the body favouring the production of such disease, than on the strength or violence of the stimulus, or more immediate exciting cause. So that we find that diseases of an inflammatory character may, in some individuals, be produced by one tenth part of the exciting cause which would be required to produce it in another. Hence, we observe that those persons whose systems are kept in a lower degree of tone, in consequence of their labouring for some time under some slight chronic ailment, such as rheumatism, dyspepsia, or even toothach, may enjoy a particular immunity from attacks of inflammation, and even from prevailing epidemics. On the same principle, we observe that many persons, immediately before being attacked with a dangerous disease, enjoyed a more than ordinary degree of good health, during which period they contracted the plethoric condition, which perhaps was absolutely necessary to the occurrence of the disease. Causes productive of inflammation appear to act in a considerable degree through the medium of the nervous system, so that indulgence in living, the dissipation of late hours, and the neglect of a proper degree of exercise, by increasing the tone of the nerves,

and by rendering them more irritable, contribute as much in this way to the production of disease, as by directly increasing the contents of the circulating vessels.

In the preceding remarks regarding blood-letting as a remedy in disease, I by no means intend to recommend it, to the exclusion of other and powerful auxiliaries. Purgatives and other measures are capable of fulfilling important indications in the cure of many inflammatory diseases, which blood-letting is by no means calculated to do. But I have endeavoured to ascertain the great importance of that powerful remedy in many diseases. And my remarks may do some good in removing those prejudices which still actuate the minds of some medical men in their ordinary practice.

II.

Traite des Convulsions chez les Femmes enceintes en travail et en couche. Par ANTOINETTE MIGUEL. Paris, 1824.

(From Anderson's Quarterly Journal.)

This is an ingenious and animated treatise on a very interesting subject. It is, indeed, not remarkable for the novelty of its matter; yet, as it inculcates many points of practical utility, with great perspicuity and eloquence, we need make no apology to our readers for giving them some account of its plan and execution, and for presenting them with a few of its most striking passages.

The work consists of four chapters and an appendix: the first treats of convulsions in general; the second, third, and fourth, are dedicated to convulsions, as they occur in pregnancy, during labour, and after delivery; and the appendix supplies some additional matter, which should have been inserted in the body of the work. The doctrines and practice contained in the three last chapters and appendix, are confirmed by a number of cases, selected from Ballonius, Mauriceau, De la Motte, Levret, Lorentz, Malacarne, Coutouly, Bouteilloux, Girard, &c.

Convulsion and Spasms.—Tonic and clonic convulsions, or spasms and convulsions, in the opinion of our author, differ only in degree.

“The Greeks,” he says, “confounded these two states under one name (spasmos), and it is only by means of subtle and arbitrary divisions that the moderns have been able to separate them.—By what means are we enabled to prove that the nature of two diseases is the same? Is it not by the examination of their seat, their cause, their symptoms, and their treatment?”

If then, all these circumstances are the same in the two cases, is not the attempt to distinguish them, or make them different diseases, useless? The seat of convulsions is very evidently the same as that of spasms; both are seated in the muscular fibre, wherever it is found, and in that alone. The identity of seat naturally supposes the identity of cause. There is some difference, indeed, in the symptoms; sometimes there is but a slight contraction, an evanescent shiver; sometimes the contractions are severe and frequent, followed by relaxation; and sometimes the contraction is violent and lasting, and presents but indistinct intervals of repose or remission.

But what proves that these varieties of convulsive affection are but different degrees of the same disorder, is this, that they are even met with in the same circumstances, and under the influence of the same causes; for they are observed, almost always, after large wounds, great operations, very severe fevers and excruciating pain; and that they naturally pass into each other, and are intimately blended in the greater number of cases. Tension and stiffness often announce convulsive movements, and these in their turn sometimes precede tetanus. Who can determine the time a permanent contraction should last, not to be convulsive? I do not know that this has ever been done, nor do I see any practical utility that could result from it. We may be told, that, in the treatment of spasmodic diseases, this distinction merits every attention; but Ballonius and Cullen thought otherwise, and they were no ordinary practitioners; and we have but to read the works of the most esteemed physicians to be convinced that the treatment generally recommended rests upon the same foundation, is regulated by the same indications, and requires the same remedies. A class of antispasmodic medicines has been established, but it has never been divided into two orders, the one destined to oppose spasm, and the other convulsions."

The author divides convulsions into two kinds, the one comprehending those of the voluntary, the other those of the involuntary muscles. The first kind he calls *external*, the second *internal* convulsions; but there is also a class of convulsions, compounded of these two, which he has named *mixed*.

Causes of Spasmodic Disease.—He now enters upon the consideration of the immediate cause and the nature of convulsion, and makes some remarks on that state of the human frame which is most favourable to the production of spasmodic diseases; but as there is nothing very uncommon in his speculations on these subjects, we shall pass them over entirely, and

give the reader merely their result, as summed up by the author in the following propositions:—

“The intervention of the brain or of the spinal marrow is necessary to produce the convulsions in the first order, or of the voluntary muscles.

“The brain may be affected directly or indirectly, and hence convulsions are idiopathic or sympathetic; this division should likewise be extended to convulsions of the involuntary muscles. Convulsions are favoured by a particular state of the brain and nerves, by plethora, the sympathies of organs, &c. The involuntary muscles are not subject to any general law with regard to the production of those convulsions which affect them.”

Convulsions of the Pregnant State.—We now turn to the convulsions which occur during pregnancy. These are no more a disease *sui generis*, than puerperal peritonitis is an inflammation of a different nature from ordinary peritonitis. But the parturient state modifies, in a striking manner, the influence of their causes, and their mode of treatment; and it is of much consequence that the practitioner of medicine should study these modifications. All those causes which are capable of producing convulsions at any time, may equally produce them during pregnancy; but then those causes are much more powerful, because they are, in some sort, aided by a special permanent cause, which it is impossible to remove; and that is pregnancy itself.

“What is it in reality,” says our author, “which constitutes pregnancy? It is the existence of a fœtus in the organ destined to preserve it. What is the most striking phenomenon of pregnancy? It is, certainly, the growth of this new living principle. This growth necessarily supposes an excess of life: the woman who furnishes its materials must then enjoy a state of more active vitality than formerly; and this of itself is a circumstance eminently favourable to the production of convulsions; and experience, which confirms this theory with regard to children, renders its truth still more evident in the case of pregnant women. This activity is first of all shown in the womb, which is the organ appointed for this function; very sensible changes are taking place in its physical and vital properties; its substance becomes softer and more spongy; its sensibility becomes greater as pregnancy advances; and the irritability with which it is endued is so clearly exhibited, that M. Deneux has no hesitation in putting it on a level with the contractility of muscular organs. By this increase of vitality additional energy is given to the sympathies of the uterus, already so numerous and so various.—Consider how keen is the general sensibility of woman at this

period of life ; the least agitation, the least shock, the slightest impression, whether physical or moral, very readily deranges the natural equilibrium of her system ; her physical constitution becomes softer and more relaxed than in its ordinary state ; all its textures are moistened with fluids which soften them, and the fibres seem to lose their firmness, that they may be able to undergo the necessary distention : but this particular disposition and flexibility of parts, if they are still in a sound state, are far from indicating any debility of the system ; they are but a state of body necessary for the growth of the fœtus at the expense of its mother. But it is not this laxity of textures which increases the irritability of the muscular fibre ; these two phenomena coincide, but they do not depend upon one another ; they are the immediate effect of the increased activity of life.

“ It is to this activity alone, that the greater part of the phenomena which are observed during pregnancy must be attributed. It is through it that the nerves receive vividly both internal and external impressions, that the brain re-acts with vigour, and that the muscles obey its impulse with a correspondent energy. This cause, which is manifested externally by a greater degree of nervous sensibility, is no less evident internally ; as may be proved, provided the body is in a healthy state, by the strength and liveliness of the pulse, and the activity of digestion. It has been said that the intellectual faculties are weakened ; and although a statement of Larry’s proves the direct contrary, we may easily explain this phenomenon, when it exists, by showing that the concentration of vitality upon a particular organ, necessarily occasions a degree of weakness in some of the other functions. It is the womb which is here indisputably the central point on which all the organs re-act, and it is thence that all the sympathetic irradiations take their departure that go to communicate to all the systems the feelings of the uterus, and to subject them to the powerful influence under which that organ is itself placed, until a fixed period.—From this sympathy a great number of diseased actions spring, more or less dangerous, according to the parts affected or the nature of the diseased action. One of the most frequent of these is convulsion, and the influence of the uterus may produce it in every part where there is muscular fibre. The uterus itself, formed of a substance, the texture of which appears different, but of which the functions are not at all equivocal, is evidently muscular, and this circumstance gives additional energy to its re-action. The stomach, the diaphragm, the heart, the external muscles, all participate in the particular state of this organ. Continually stimulated by the body it encloses, continually in action on

account of the important function which it fulfils, it may be considered, without risk, as in a state of permanent irritation."

We have ventured to extract the whole of the above passage, as it will convey to our readers an accurate idea of our author's manner, and impress strongly on the mind what cannot be too well known. We may observe, however, before quitting this subject, that the sympathy of the uterus is often productive of beneficial consequences.

Causes.—The causes of convulsion during pregnancy, are now treated of under the heads of plethora, hemorrhage, distention, and irritation of the womb, abuse of sexual intercourse, errors in diet and regimen, and passions of the mind. Plethora, the first of these, has been regarded from the earliest times as a powerful cause of convulsions; and its opposite state, inanition, has been regarded as no less so by Hippocrates and Galen. The latter, indeed, has made use of this strong expression: "*Ego in convulsione tertiam causam præter inanitionem et repletionem nondum reperi.*"

In the pregnant state, also, nothing is more apt to produce convulsions, than improper food, or even the abuse of that which is of the most wholesome quality.

"At every period of life," says our author, "spirituous liquors are contrary to the temperament of woman; but it is more particularly in pregnancy that their effect may prove fatal. Nothing perhaps produces convulsions with greater certainty than drunkenness. Women of a certain rank, indeed, are not exposed to it, but even with them the inconsiderate use of coffee produces effects, which are in no respect less fatal. This beverage, extremely stimulant, irritates the nervous fibres, the sensibility of which has already been much increased by pregnancy; so that irritability of the stomach, excitement of the heart, agitation of the muscles, and sleeplessness are its ordinary effects. We may thus judge if coffee is as fit for pregnant women as its very general employment would argue it to be."

Of all the passions, anger is oftenest attended with bad consequences; sudden and long continued laughter, may also produce convulsions; and hatred, jealousy, sorrow, may have the same effect, in different degrees, or may bring on premature labour.

Independently of the above causes, convulsions, in our author's opinion, may be attributed to imitation; for in an hospital, when a pregnant woman is seized with convulsions, it is no uncommon thing to see several other women in similar circumstances, attacked in the same manner. Such is the fact, indeed; and M.

Miguel thinks it more philosophical to assign it to imitation, than to a certain constitution of the atmosphere.

Partial or General Convulsions of Pregnancy.—The convulsions occurring during pregnancy may be partial or general; and the first of these may be divided in the manner we have already mentioned. External partial convulsions belong to the face, trunk, and limbs.

“Even, says our author, in her best state, there exists in the physiognomy of a pregnant woman, an alteration which it is impossible to define, but which is known at once by people of experience. This change which takes place in the features, and particularly in the lips and chin, indicates a very marked sympathy with the uterus; and if this sympathetic influence becomes morbid, the particular state of the muscular fibre which occasions it, easily degenerates into convulsion. This may affect all the muscles of the face, and give rise to those singular distortions, vulgarly named grimaces, the infinite number of which defies description.”

But we must not follow the author in his account of these partial convulsions, among which he includes cramp and chorea.

Internal partial convulsions are those of the heart, stomach, intestines, and uterus, of which M. Miguel has given a short, but accurate description. Speaking of the latter he observes, that we ought to consider as uterine convulsions those contractions which, for the most part, without any known cause, occur during pregnancy; and which, commonly are the forerunners of abortion.

Vomiting, cough, and hiccup, are placed under the head of mixed partial convulsions.

“Almost from the first moment of conception,” says M. Miguel, “the stomach seems to be a sharer in the new sensations of the womb; nausea, which is but an attempt at vomiting, commences; vomiting soon follows; and this sensibility of the stomach is, to the vulgar, and often to the physician himself, the only mark that pregnancy has taken place.”

Cough is often very troublesome, and is not always free of danger. Never, in any case, is there a mucous or purulent expectoration, unless the patient be affected with catarrh or some organic disease of the lungs. Hiccup is rarely dangerous, but becomes very troublesome when it is prolonged; and sometimes it is so fatiguing that it occasions vomiting. M. Miguel knew a woman who was troubled with it during the three last months of pregnancy, but who felt no more of it after her delivery.

“General convulsions,” says our author, “are sometimes preceded by the partial ones which we have now been considering.

But at other times they attack the patient without a single precursory symptom, without any local disturbance, in short without any prelude which might make their appearance dreaded.— In ordinary cases, however, dull pains, considerable anxiety, tingling of the ears, dazzling of the eyes, deep sleep, starting of the limbs, a sense of something creeping on the skin, a feeling of oppression, a sensible difficulty of breathing, precede the invasion of the fit. The pains, particularly the headache, in a short time increase, the eyes have a wild expression, the patient becomes blind or deaf, consciousness is lost, the functions of the brain cease, the limbs are agitated by convulsive motions; then the breathing becomes noisy, the mouth and nostrils are filled with foam, the eyes roll in their sockets, the agitation of the muscles is extreme, the spasmodic locking of the jaw, the grinding of the teeth, the noise and oppression of the breathing, the violent beating of the carotid arteries, the tumefaction of the jugular veins, the involuntary ejection of the urine and *foeces*, the distortion of the trunk, the swelling of the face, the projection and enlargement of the tongue, altogether present a spectacle truly terrifying. After this state has lasted for a longer or shorter time, the woman falls into a profound sleep, or stupor. The breathing becomes more tranquil, but it does not return to its natural state; the memory and other faculties of the mind remain suspended, and the patient is still blind and deaf. A new fit commences, the same phenomena are exhibited, and the convulsions, thus renewed a great number of times, leave the woman without sense, and almost without life, for several successive hours, or even days. When the attacks are so frequent and so violent, the woman generally sinks under them; but labour in the mean time comes on, and the life of the *foetus* is even in greater danger than its mother's. Besides abortion, which is then the ordinary effect of these violent convulsions, the affection of the brain which produced them, rises sometimes to such a height as to occasion hemiplegia, or even apoplexy. But it is not at all times that general convulsions present such horrid spectacles, or are attended with such danger."

The most frequent cause of general convulsions is plethora, particularly in the vessels of the brain; but very often there is no external symptom indicative of cerebral congestion. The brain, however, is always affected, but the cause of its being so, is beyond our reach. The partial convulsions which occur in pregnancy, are oftener sympathetic than idiopathic, while general convulsions are more frequently the effect of local congestion, than of sympathy. General convulsions the author calls neither apoplexy nor epilepsy, nor hysteria, but merely the ef-

fect of cerebral re-action, which in different individuals may be infinitely varied, from an involuntary chill to the most violent epilepsy or tetanus.

Prevention.—With the view of warding off convulsions, the physician's whole attention must be directed to nervous irritability and plethora. The first may be remedied by tranquillity of mind, by anti-spasmodics, by moderate exercise, and a well regulated diet ; but if the second is present, we must have recourse to blood-letting which is then the quickest, the surest, and the most beneficial remedy that can be employed ; and in this all practitioners agree. It abstracts instantly a most powerful stimulus, and relieves the brain from a state of strong excitement, and modifies general sensibility in a striking manner. It is of most use against general convulsions. During pregnancy, a woman has been bled ninety times. Such examples, says M. Miguel, should not assuredly be imitated, but they show to what an extent blood-letting may be carried, and how easily blood is reproduced in pregnant women.

Prognosis.—The prognosis in this disease is formed from the age of the woman, the place of her abode, the period of her pregnancy, and the kind of convulsion by which she is attacked.—When the woman is not young, when she is the inhabitant of a crowded city and near her time, and when the convulsions are general, there is always great danger.

Treatment.—We need not enlarge on the curative means to be employed in partial and general convulsions, as they are well known ; but we may remark, that in almost every case, the favourite remedy of our author is blood-letting, most others with him being merely accessory to it. And when there are signs of sanguineous congestion in any of the principal organs, he very properly reprobates the use of opiates ; but where cerebral excitement is present without congestion, the tincture of opium, in combination with some mild and agreeable anti-spasmodic, may be administered with great advantage. In such cases, M. Miguel recommends highly a combination of camphor and opium.—Emetics, he disapproves of. When, after the fit, the woman remains comatose, he advises the use of blisters to the back of the neck, the thighs and arms. Cupping and scarifying, he thinks are too seldom employed. The application of cold water to the head in congestion is a rational practice, but in mere nervous excitement it may be attended with the worst consequences.

Puerperal Convulsions.—Speaking of the convulsions which occur during labour, our author observes that labour itself very frequently induces them ; 1. by the effect of the partial and

general contractions which it renders necessary ; 2. by occasioning the blood to be regurgitated towards the head and into the minutest vessels of the brain ; 3. by the sympathetic effect of pain, which affects all the nervous, and consequently all the muscular system. In the second case, the convulsions are idiopathic, in the first and third, sympathetic. We regret that our limits will not allow us to transcribe M. Miguel's very vivid picture of the phenomena of labour. Besides labour itself, every thing that is capable of thwarting the contractions of the womb, of retarding the birth of the child, or occasioning efforts beyond those which are naturally necessary, must increase the tendency to convulsion, and may be regarded as one of its causes. In such cases, which it would be waste of time to enumerate, the contractions of the womb very speedily become morbid ; and consequently general convulsions frequently attend them.

"Compare," says M. Miguel, all the observations of those authors who have spoken of convulsions that come on during labour, and you will almost always find that the birth of the child had been delayed for some time by an obstacle which opposed its passage, and that the labour had been languid for some hours. I do not say that is always the case, but it happens often enough to justify the connexion which I have pointed out betwixt morbid contractions and convulsions. If their identity is not acknowledged, it must be allowed that they have a great resemblance, and that if we wait for the appearance of the first, we almost always run the risk of meeting with the second."

Prognosis.—In these convulsions our prognosis rests upon the same ground as in the former.

"If they have not commenced," says our author, 'before uterine contraction has taken place, we may be able to prevent them by appropriate remedies. For this purpose, blood-letting, repeated according to circumstances, will prevent the bad effects of plethora ; emollient and mucilaginous lotions, unctuous liniments, &c., will diminish the rigidity of the parts ; change of position of the fœtus, when it is practicable, will prevent the inconvenience of a preternatural presentation ; and by rendering the delivery more easy, these means may be regarded as prophylactic or preventive of convulsions. Even when the convulsions have begun, these means ought on no account to be neglected, as they may remedy the cause which produced and keeps up the convulsive action. But in spite of these remedies, it often happens, that the convulsions continue, without our being able to assign any cause for their existence but the labour itself of parturition ; and it is only by putting an end to it, that we

can save the woman from the violence of a disease which threatens her with death."

Treatment.—Several authors have taught, that when convulsions make their appearance during labour, we should have recourse immediately to artificial delivery, but others have been unwilling to establish this as a general rule. Artificial delivery, they think, should never be employed, but when the efforts of nature are altogether unavailing.

"If," says M. Miguel, "when labour is complicated with convulsions, the appearance of the patient, the flushing or lividness of the face, the fulness of the vessels, the strength of the pulse, the throbbing of the carotids, &c., indicate a state of plethora, we must have recourse instantly to blood-letting, from the arm or the jugular vein if possible, or, if that cannot be done, we must apply leeches to the fore part of the neck, to the temples, or behind the ears; and these remedies must be repeated or not, according to circumstances. It is in such a case as this, which is the most common, that frequently washing the head with cold water, cupping and scarifying the back of the neck, and using acrid and irritating clysters, are of decided benefit. If, on the contrary, the paleness of the face, the brilliancy of the eyes, a small confined pulse, and clear urine, give evidence of irritability of the nervous fibre, without cerebral congestion, a state much less frequent than the preceding one, we must employ baths, opiates, antispasmodics, anodyne clysters, musk, camphor, and assafœtida; then also sinapisms and blisters to the feet, legs, and thighs, and if such a state be occasioned by violent pain, originating in laceration of the womb, ulceration, &c. we must place our chief dependence upon opium."

We think it needless to follow our author on the subject of artificial delivery, but we extract the following passage, as it investigates a very interesting question.

"Hitherto," he says, "we have supposed the orifice of the womb sufficiently dilated to permit the exit of the fœtus, or at least capable of being so far dilated as to allow the hand to be introduced into the inside of its cavity. This condition is essential to every kind of delivery. But there are cases, and particularly during the continuance of convulsions, when the orifice of the uterus resists equally the exit of the fœtus or the introduction of the hand. It would seem that there the uterine fibre itself is in a state of spasm, or tonic convulsion, which confines it and shuts its orifice. It resists the finger which attempts its dilatation, and it would be ruptured, sooner than be dilated.—This constriction of the orifice has for some time attracted the

attention of practitioners, and an operation has been proposed to remedy it."

When the usual remedies have failed, an incision has been made through the edge of the orifice, and it has succeeded. On this important subject we may subjoin some observations of M. Chaussier, which our author has inserted in his appendix.

Belladonna.—"Various considerations," he says, "determined me to seek some milder and more rational method of cure; and as henbane and belladonna, when applied to the eye, occasion the dilatation of its pupil, I had some hope that a preparation of these plants might have the same effect on the orifice of the uterus. For this purpose, about fifteen years ago, I got a pomatum made of henbane, and another of belladonna, and gave some of it, with the instrument necessary for using it, to madame la Chapelle: and she informed me that she had always found it very serviceable in difficult cases of rigidity and resistance of the orifice, or of the uterus, or even of the vulva. Madame Legend has also employed it several times, and always with great success. This pomatum consists of eight *grammes* of good extract of belladonna, diluted with as much distilled water, and rubbed up with thirty-one *grammes* of simple cerate or purified hog's lard."

This pomatum is applied to the os uteri and its circumference, by means of a syringe of a peculiar construction; and generally in about thirty or forty minutes after the application, the orifice of the uterus becomes so much softened and relaxed, that it presents no longer a resistance of any kind.

M. Miguel attributes the convulsions which occur after delivery to hemorrhage, clots of blood, wounds, laceration, or contusion of the womb, errors of regimen, suppression of the lochia, abuse of purgatives, and passions of the mind. We give his remarks on hemorrhage, as being by far the most interesting of those subjects.

"It occurs oftenest," he says, "after delivery. When an animal is bled to death, it dies in convulsions. At the moment when life departs, all the great muscles are agitated with irregular movements, and as there is no way of restoring to the vessels the blood which has been taken from them, it is impossible to recal to life animals thus deprived of blood, when the quantity of that fluid which has remained in the vessels is not sufficient to excite those organs, the functions of which constitute life. Thus the hemorrhage which is followed by convulsions in women who are pregnant, or in child-bed, is almost constantly mortal.—Here, the convulsions do not cause death; they are merely a phenomena attending the last moments of life. The cause of

this phenomenon has been sought often. M. Baumes attributes it to a deficiency of tension in the vessels which brings on a relaxation of the whole system ; but how can a relaxation, a deficiency of tension, give rise to the most lively and energetic contractions ? Leroux, of Dijon, looks upon convulsive syncope as a preservative effort of nature ; and this opinion, which Ballonius had previously entertained, has been adopted in the present day by M. Broussais ; but to me it appears liable to many objections. Were I to choose an hypothesis, I would rather have recourse to the mode of negative excitation of Bichat ; for it must be acknowledged that there is a change of state in the condition of the brain. This change produces a vitiated action, but this action cannot last long ; for the sudden absence of the ordinary exciter, an absence which has been able to occasion irregular movements, cannot support them like the exciter itself, which is certainly renewed. This impression not being renewed, it is full but for a moment, and then is instantly dissipated, unless there be still a quantity of blood sufficient to support that relic of vitality which is just upon the point of being extinguished."

But we must stop here, for at every step we move farther our author becomes more and more obscure ; and at last ends the subject with saying that he knows nothing about the matter. By internal hemorrhage, at this period, is generally meant extravasation of blood or its accumulation in the cavity of the uterus ; but such hemorrhage may also be occasioned by the rupture of a blood vessel in the abdomen or chest, from the exertions made during labour. In all these cases, convulsive syncope is generally followed by death.

The same kinds of convulsions may come on after delivery, as those we have already mentioned ; but they happen much more rarely ; indeed seldom any other but hysterical or epileptic women are attacked by them. When they occur to other women, they are generally the sequel of convulsions which have preceded labour, or appeared during its continuance. In all cases, the remedies are nearly the same. Our author's remarks on this subject are sensible and perspicuous, but they are not new. However, we shall transcribe his concluding paragraph.

"In all cases," he says, "we must pay attention to the strength of the patient, to her original temperament, to the obstacles which have occurred during labour, to the time which has elapsed since delivery, and in short, to the phenomena of the secretion of milk, and of the excretion of the lochia, which necessarily take place. Here the accoucheur enters upon the general domain of medicine, and the rules which he has to follow, do not belong more particularly to his own art, than to any other branch

of the healing art ; which proves that midwifery is not purely mechanical, and that to exercise it with success, the accoucheur must join to manual dexterity, the most profound knowledge of physiology, dietetics, and therapeutics."

We have thus finished our review of M. Miguel's work. The author has a clear head, and he draws pictures of disease admirably, and in a very lively and interesting manner. Puerperal convulsion, however, seems to be his hobby, and when he once gets on it, he is apt to continue there longer than may be agreeable to the generality of readers. Notwithstanding this, he is a most agreeable writer ; and we hope that he will soon throw the fascination of his manner over some other practical subject.

III.

MANZONI and others on *Hydrocyanic Acid and Iodine.*

(From the Edinburgh Medical and Surgical Journal.)

Among the new remedies which of late years have been gradually getting possession of professional confidence, and may be now said to be added to the pharmacological lists of the practitioner, hydrocyanic acid, and iodine and its preparations, hold a very distinguished place. Their decided characters as physiological agents, and their alleged effects in the cure of diseases, call on us, even at this late period, to bestow a short and hasty notice on their virtues, and their employment in the practice of physic.

It was in the year 1780 that Scheele first taught the chemical world, that the substance termed *prussian blue*, which had then been known for seventy years, consisted of iron combined with a peculiar acid, which was afterwards named *prussic* by Guyton-Morveau. The subsequent researches of the elder Berthollet and of Fourcroy, showed that this acid consisted of carbon, hydrogen, and nitrogen. Porrett attempted to assign the proportions of each,* and inferred the existence of another acid, which he termed the *ferro chyazic* ; but it is to Gay-Lussac that we are indebted for the knowledge—that the prussic vapour, if deprived of its hydrogen, forms a gaseous substance which is the basis of the prussic acid, and to which, for that reason, he applied the denomination of *cyanogen*.† The acid liquor which is formed by the union of hydrogen with this substance, he term-

* Carbon, 24.8 ; Hydrogen, 34.5 ; Nitrogen, 40.7.

† Generator of blue.

ed the *hydrocyanic acid*, and that arising from the union of equal portions of chlorine and cyanogen the *chlorocyanic acid*.

If we admit, as is ascertained by chemical analysis, that the active principle of bitter almonds, the leaves of the cherry-tree laurel, the peach blossom, and other similar vegetable substances, is hydrocyanic acid, then it may be said that the use of this substance in medicine is very ancient. The cohobated liquor of the black cherry was an officinal preparation in the pharmacopœias of the London and Edinburgh Colleges, till the experiments of certain physicians in Worcester, mentioned by Lewis, demonstrated its fatal effects. The distilled water of the cherry-tree laurel was used in certain disorders of the stomach by Duhamel du Monceau, and Browne Langrish; Baylies was in the habit of using it in the treatment of rheumatism and asthma; Cameron considered it very efficacious in obstructions and obstinate diseases of the liver; Cheston recommended it in cancer of the face; and Perceval ascribed to it a resolvent power.

Hydrocyanic acid, however, though found in various parts of plants, does not exist in a state of purity in any natural production; nor can it be obtained of uniform strength for the purpose of medical administration; and although it did exist in the substances to which we have now alluded, the ancient use of these substances in the treatment of disease, would not furnish much accurate information on the use of the agent, as it is obtained from the laboratory of the pharmacologist. We learn from Manzoni and Dr. Granville, that hydrocyanic acid was not employed in this form before the beginning of the present century; and that previous to 1806, Borda, Brugnatelli, and Rasori administered it in diseases which they considered as distinguished by high excitement. Brugnatelli had stated in his *Farmacopeia* of 1802, that it was useful in pneumonia, angina, tubercular cough, catarrh, &c.; and we learn from Manzoni, that Professor Brera of Padua, who had previously (1797) used the cyanuret of mercury in syphilitic affections, was in the habit, after 1809, of administering hydrocyanic acid in pneumonia and other diseases of the lungs, in the Clinical Institute of Padua. These examples seem to have rendered the practice pretty general in the northern states of Italy, and in some parts of Germany; for Sprengel recommended it not only in affections of the lungs, but in complaints of the stomach, hypochondriasis, &c.; and Hufeland employed it frequently, and successfully, in the treatment of various obstinate disorders, in 1812 and 1814.

In 1815, Dr. Granville first called the attention of the profession to this medicine in England, in his observations on the use of hydrocyanic acid in pulmonary complaints. Professor Brera,

in the following year, communicated the result of his experiments, in his Reports of the results obtained in the Clinical Institute of the University of Padua; and Magendie, who had tried the remedy in 1815, published his researches on its effects in 1817, and recommended it strongly as a remedy in consumptive disorders. The more complete researches of this physician, the elaborate memoir of Coullon, the thesis of Manzoni, the short account of Dr. Elliotson, and the present edition of Dr. Granville's work, with one or two others of less consequence, are the publications which have since appeared, and which have contributed to add to our knowledge of the effects of this medicine, or increase our confidence in its powers.

Dr. Granville gives formulæ for the preparation of the hydrocyanic acid, according to the four processes of Scheele, Vauquelin, Magendie, Gay-Lussac, and the London Apothecaries' Company. So far, however, as the practice of physic is concerned, it is quite unnecessary to attend to any other but those of Scheele and Gay-Lussac, or to enumerate any other forms of the medicine than those obtained by these two processes. From the experience of Magendie there is reason to believe, that the acid obtained, according to the procedure of Scheele, is neither sufficiently uniform in strength, nor sufficiently pure, to be quite manageable. The truth of this we have in some degree the means of confirming by personal observation. In the summer of 1819, we had occasion to administer hydrocyanic acid in some affections of the chest, in which the account of Dr. Granville led us to think it might be useful. None of the medicine, however, could be obtained in Edinburgh, and we had it prepared according to the process of Scheele, under our own immediate inspection, by a careful and intelligent friend, well versed in the practical details of chemistry. The hydrocyanic acid thus obtained, was found capable of killing small animals; and when exhibited in the human subject, it produced its proper and usual effects. It was found, however, not to act with uniformity; and while, in some persons, its ordinary doses were followed by evident sedative results, in others no change could be recognised. Magendie, we are informed, encountered the same inconvenience; and he has, therefore, been led to relinquish the acid of Scheele entirely, and substitute that obtained by the process of Gay-Lussac. The density of the acid procured in this manner, is at 45° to that of water, as 0.70,583 to 1;* but as this is greatly too concentrated

* The statement given by Dr. Granville, though numerically correct, is not according to the usual fashion of computation. He makes it 70,583 to 1,

for medical use, Magendie dilutes it with 6 times its volume, or 8 1-2 times its weight of distilled water ; so that the weight of this preparation will be equal to 0.920583.

This hydrocyanic acid has been recommended strongly in various forms of consumption, in pulmonary hemorrhage and inflammation, and in certain forms of stomach complaint. Perhaps the greatest fault which could be charged against its patrons is, that it is too indiscriminately, and too generally commended as a remedy ; and it may be feared that it will thus share the fate of many other agents, which, though possessed of some real virtues, are thrown aside contemptuously, because they do not possess all, and because they are not efficacious in the most opposite morbid affections. In the work of Dr. Granville, for example, which is certainly the most elaborate account hitherto given of its medical properties and its employment in disease, it is recommended not only in the ordinary pulmonary affections in which it has been believed on just grounds to be remedial, but in tubercular disorganization, in chronic peripneumony and pulmonary abscess, in abortion, disordered menstruation ; in nervous diseases, as hydrophobia, angina pectoris, epilepsy, and spasmodic colic ; and in some organic diseases. Now, it is scarcely in the nature of things that any single remedy could control morbid processes so numerous, and in some instances so opposite ; and certainly impossible to suppose that any remedy could remove pulmonary tubercles, or scirrhus of the stomach, or those opposite organic changes on which the symptoms termed *angina*, depend. Dr. Granville has, indeed, by subdivision of diseases into varieties, attempted to distinguish those in which hydrocyanic acid is to be administered : but it may be doubted whether his views on this subject are quite correct. His first species of consumption is evidently that form of pulmonary disease called chronic pleurisy : and we are not aware that hydrocyanic acid has been known to exercise any favourable effect over it. We should doubt how far any species of consumptive disease could be said to be owing to a vitiated state of the animal fluids, which is the second of Dr. Granville : and should doubt much more whether hydrocyanic acid could remove this condition. We cannot agree with Dr. Granville at all in prescribing it in tubercular consumption ; for never, in any case in which it could be ascertained that the lungs were tuberculated, have we seen it do

by omitting the cypher ; a thing of some consequence in decimal enumeration ; and this in fact gives hydrocyanic acid the impossible quality of being 70 times heavier than water.

good, and in some its exhibition has appeared to aggravate the sufferings of the patient.

The most favourable forms of consumptive disease for the exhibition of this medicine, appear to be those depending on chronic bronchial inflammation, and that to which the German writers have applied the name of *florid phthisis*. In the former, it has been found to abate the membranous inflammation, reduce the quickness of the pulse, and relieve the cough ; and, in one or two examples in which the symptoms, such as occasional hemoptysis, were to be referred to the latter, its exhibition has been known to be attended with disappearance of the complaints. Considerations of this nature appear to suggest its use in the third species of consumption enumerated by Dr. Granville. On the propriety of employing it in that variety, if it be a variety, which attacks the female constitution during pregnancy, after parturition, or after long suckling, it is not easy to lay down very general rules. Dr. Granville adduces nine cases, in seven of which the hydrocyanic acid was followed by restoration to health, while in two, the sixth and seventh, it was attended with no benefit, further than general alleviation of their sufferings. It may be remarked, that all cases of consumption which take place in the persons of females under the circumstances now mentioned, do not depend on the same morbid state of the lungs ; for the same remote cause will often be attended in different individuals with different effects : and though many females are cut off after parturition, with cough, expectoration, and other symptoms indicating catarrhal disease, yet not a few die without any appearance of this kind. The distinction, so far as the exhibition of hydrocyanic acid is concerned, is of little practical use.

Dr. Granville strenuously advocates the use of hydrocyanic acid as an auxiliary to blood-letting in pneumonic inflammation. In this he is supported by the authority of Brera, who, in his report, repeatedly dwells on the advantages resulting from its use under such circumstances. Its operation is quite similar to that of foxglove ; and where it can be depended on as to its composition and actual powers, it may be usefully employed in cases in which blood-letting has been carried so far, as to render the propriety of its further employment doubtful.

In other inflammatory diseases, its advocates recommend hydrocyanic acid with not less confidence. Brera used it successfully, we are informed, in the treatment of inflammation of the spinal chord (*rachialgitis*,) for which he is praised by his pupil Manzoni ; and Dr. Granville thinks he prevented the fatal termination of a case of inflammation of the diaphragm.

and one of inflammation of the womb: but in both instances copious blood-letting had been previously practised, and the force of the disease was certainly broken. The hydrocyanic acid, in such instances, appears to operate very like opium, or any other sedative medicine, which, when the powers of the circulation have been reduced to extreme weakness, gradually induces a state of the system, during which the contractions of the heart become less frequent, but fuller; and the capillaries of exhalation and secretion at length resume their usual functions.

Asthma, or any other spasmodic difficulty of respiration, and the fits of hooping-cough, are relieved by this medicine, as they are by many others; but it will depend much on the result of other remedies, and on the peculiar views of the practitioner, whether he would employ an agent which requires very sedulous attention in watching its effects.

There is something paradoxical in the use of hydrocyanic acid in treating affections of the stomach. Every one is familiar with the unpleasant effects of eating the kernels of the bitter almond, ratafia biscuit, or any thing flavoured with this substance; and there are few indeed in whom a small quantity of noyau, cherrywater (*kirschen-wasser*,) or any similar substance, would not suspend the action of the stomach much more effectually, and much more speedily, than an equal quantity of pure spirit of wine. The same, it might be argued, may be said of opium, or other narcotic substances, from which dyspeptics sometimes derive benefit. To correct, to modify, or to enlarge our ideas on the effects of hydrocyanic acid introduced into the stomach in this manner, we are not much aided by the elaborate researches of M. Coullon; but if we trust his observations in the only analogous case, that of the slow and lengthened action of the acid, it is very difficult to derive any confirmation of its good effects. "When the bodies of animals treated in this manner are opened," he informs us, "we find the muscular organs, especially the heart, long irritable, and the intestines long agitated by their peristaltic motion, but the nerves have lost the power of propagating impressions made on them." It requires no long train of reasoning to perceive, that these facts would neither lead one to expect benefit from hydrocyanic acid in disorders of the stomach, nor would explain its alleged good effects. The testimony of Drs. Elliotson and Granville, to show that it has effected cures of cases of this disorder, appears at first sight satisfactory enough; but, in general, other remedies, as cathartics, were exhibited at the same time, and it is doubtful whether they did not produce the relief which was ascribed to the hydrocyanic acid. Has it any other power than that of di-

minishing morbid sensibility? Both Brera and Granville recommend and administer this remedy in scirrhus or cancer of the womb; and Manzoni informs us, that Osiander, the late distinguished obstetric professor at Gottingen, has successfully imitated this practice.

We must not omit to mention, however, that this medicine does not appear to retain, among some of the French practitioners, the reputation which it acquired by the researches and experiments of Magendie. Several of them have therefore been prompted to seek for a substitute in one or other of its saline preparations; and it has been thought that they have attained the object of their wishes in the cyanuret of potassium. At the sitting of the Academy of Medicine, of 15th June 1823, MM. Robiquet and Villerme communicated several chemical and physiological observations, to prove that this substance might be advantageously substituted for the pure hydrocyanic acid in the treatment of diseases. We have already alluded to the inconvenience and uncertainty resulting from the rapid and easy decomposition of this acid. The cyanuret of potassium may be preserved for any length of time without change; and the researches of MM. Robiquet and Villerme tend to show, that its watery solution, or hydrocyanate of potass, retains its properties much longer than the hydrocyanic acid does, and is followed by the same effects on the animal economy as the pure acid. It is well known, these eminent pharmacologists remark, that hydrocyanic acid does not, when pure, possess the faculty of saturating the alkalis; and in the dissolved hydrocyanate, it is free and isolated, as the taste of this solution indicates. But if we trust, to its sensible qualities in estimating its physiological powers, is it not to be thought that the free acid shall, in this condition, undergo spontaneous decomposition as readily as when no alkaline base is present? This plausible objection does not, according to the observations of MM. Robiquet and Villerme, possess so much strength as might be imagined. They state it as the result of their experiments, that a solution of cyanuret of potassium loses its proper taste, and its power of acting on the nervous system, less rapidly than hydrocyanic acid equally diluted in water. In this respect, they continue, the difference between the two substances is remarkable; the potass retains and fixes the hydrocyanic acid,—but does not saturate it. In support of this assertion, they adduce the following facts.

They made several solutions in like quantities of water, on the one hand of one grain of cyanuret of potassium, and on the other of two drops of the prussic acid, *au quart*, that is, half a drop of the hydrocyanic acid of Gay-Lussac. These solutions

were put into similar open vessels, and their taste was compared at the end of six, of eighteen, of twenty-four hours, of two, and of three days ; the solutions of cyanuret of potassium always appeared to be less weakened than those of the acid. The difference was particularly conspicuous the first two days, and in the most concentrated solutions, or those which continued exposed to light and sun. They infer, therefore, that hydrocyanate of potass is less readily changed than hydrocyanic acid equally diluted, and that it ought therefore to be preferred for medical use.

A second condition requisite to justify its adoption in medical practice, is the identity of its effects on the functions of the animal body.

When a portion of cyanuret of potassium is applied to the tongue, the spot touched becomes, at the end of one second, the seat of a sensation of fresh coolness, which is quickly changed into a very keen sensation of causticity. If, on the other hand, the tongue is touched with a drop of the solution, the sensation of coolness is experienced at the same instant, while that of causticity is remarked only as the solution is concentrated. In all cases, the solution of one grain of cyanuret of potassium in a given quantity of water, for example half an ounce or one ounce, causes a more keen and more disagreeable sensation, than four drops of prussic acid *au quart*, obtained by the process of Gay-Lussac, and diluted in one ounce or half an ounce of water.— This sensation is likewise attended with a very strong taste of bitter almonds, or of their essential oil, and the same burning heat extends along the mouth and throat. Another remarkable sensation is spastic rigidity, a sort of momentary palsy of the tongue, which extends rapidly to the neighbouring parts. Less than a fourth of a grain of cyanuret of potassium, say our authors, or a single drop of its concentrated solution, produced this effect in two persons, while other four did not experience it.

These preliminary trials were succeeded by comparative experiments with hydrocyanic acid, hydrocyanate of potass, and cyanuret of potassium, on birds, guinea-pigs and dogs, performed in the presence of Magendie and others. The general results were poisoning, in the usual mode, by prussic acid, with this difference, that dry cyanuret of potassium, placed on the tongue of animals, with the precaution of keeping the mouth shut, excited there traces of inflammation, or even cauterization. The 10th part of a grain of this salt kills a linnet in thirty seconds after the first symptoms of poisoning appear ; and less than one grain kills a large guinea-pig in two or three minutes. One drop of the hydrocyanate, containing only the

100th part of a grain of the salt, kills a linnet at the end of thirty seconds ; six drops containing one twelfth of a grain, killed a half-grown guinea-pig in less than three hours ; and half a gros, containing five grains of the salt killed an old dog, of considerable strength, in fifteen minutes. From these facts, and several others which are not mentioned, MM. Robiquet and Villerme conclude, that the cyanuret of potassium may be advantageously substituted for hydrocyanic acid in the practice of medicine ; and that the hydrocyanate, formed extemporaneously by its solution, possesses all the powers which physiologists ascribe to the pure acid. If these inferences be founded on proper and sufficient induction, the cyanuret of potassium must be a valuable substitute ; but we have not heard that any observer has yet made researches sufficiently extensive to confirm the conclusions of MM. Robiquet and Villerme. A quantity of it has been recently submitted to trial in the Clinical Wards of the Royal Infirmary ; and we may expect some observations towards ascertaining whether it is possessed of medical properties equally powerful with those of the acid, and whether it is an efficient article of the *Materia Medica*.

We have only to say further, that Dr. Granville has given many formulæ for the preparation and administration of hydrocyanic acid. We do not approve, however, of the numerous and varied vehicles in which he directs it to be given. Distilled water or rain water is certainly the most proper, and perhaps the only one that should be used.

Another form of exhibiting hydrocyanic acid has been recommended by Dr. Zollikoffer of Philadelphia, who published, in 1822, a treatise on the use of prussiate of iron, or prussian blue, in intermitting and remitting fevers. The preparation which is recommended is called Parisian blue (*Pariser-bleu*), in commerce, and is regarded by Buchner as a ferro-cynate of oxide of iron. In doses of from 4 to 6 grains, it is said to be more efficacious in ague than Peruvian bark.

Iodine was discovered in 1813, by Courtois, an eminent manufacturer of saltpetre in Paris ; but six years elapsed before it was attempted to be used in the practice of medicine. We learn from the first memoir of Dr. Coindet, that in the year 1819, when searching for a formula in the work of Cadet de Gassicourt, he found that Russell had recommended the ashes of the *fucus vesiculosus*, or bladder-wrack, under the name of *Æthiops vegetabilis*, for the cure of bronchocele ; and he was led, from analogy between this substance and the burnt sponge, so long famed, to suspect that iodine was the active principle of both. The great and unequalled success which resulted from its use,

in the treatment of bronchocele, at once indicated the power of iodine as a therapeutic agent, and encouraged Dr. Coindet to pursue his researches in rendering it an efficient article of the *materia medica*; and about the close of the same year, while Dr. Coindet had employed iodine in treating goitre for six months at least, his conjecture was confirmed by the discovery which Dr. Fyfe of Edinburgh made, that this substance was actually contained in the ashes of the burnt sponge.

It is in medicine, as in other practical applications of human knowledge,—that few innovations entitled to the name of discovery,—few changes distinguished for sagacious conjecture, can be effected, without giving rise to dispute about the merits of the individual with whom the improvement was supposed to originate. It has been generally understood among the profession, that the happy conjecture, which introduced iodine into medical treatment, originated with Dr. Coindet of Geneva; yet we find that his claim to this honour is disputed by one of his countrymen, Dr. J. C. Straub of Hofwyl, in the canton of Berne. It is always difficult, and sometimes unsafe, to attempt to decide a question of this sort; and though we have no hesitation in avowing our own personal conviction, as individuals, that the merit of original discovery belongs distinctly to Dr. Coindet, yet we shall not so far bias public opinion, as to withhold the principal facts connected with the first employment of iodine as a therapeutic agent.

Dr. Straub, whose communication is found in Professor Meisner's "Physical Intelligencer of the General Helvetian Society," &c. for 1820, states, that before the discovery of iodine, attempts had been made to compound a substitute for burnt sponge, but without success; and that this failure, and his observation of the similarity of smell between iodine, burnt sponge, and other marine productions, led him to suspect the existence of iodine, or its salts, in these substances, and that its absence in the artificial compounds was the cause of failure in these experiments. This conjecture, which appears to have been made previous to 1819, led Dr. Straub to examine the real burnt sponge; and he informs us, that though his time did not permit him to ascertain exact quantities, yet he obtained from 1½ ounce of burnt sponge, as much iodine as to render his conjecture probable, and to be astonished that the ingredient should have escaped notice. He was therefore at once induced to think of its use in medicine; and, in the same paper from which we obtain these facts, impressed with poisonous quality ascribed by Orfila to iodine, he recommended first the trial of its salts, especially the hydriodates of soda and of lime, and then that of the sub-

stance itself, to physicians whose situation permitted its employment.

The communication of Dr. Straub is dated December 1819, and was actually published in Professor Meisner's periodical work in February 1820, five months at least before the first memoir of Dr. Coindet was communicated to the Helvetic Society of Natural Sciences at Geneva. It is unnecessary to have recourse to any supposition of injustice done to Dr. Straub; much less would it be right to deprive Dr. Coindet of the merit of originality in substituting the direct and certain action of iodine for the irregular, and sometimes inert, qualities of burnt sponge, in the treatment of goitre. Coincidence of this kind is not uncommon in science; and in the present instance, the ingenuity of Dr. Straub does not diminish the merit of Dr. Coindet.

But whatever opinion be entertained of the claim to the original suggestion of the use of iodine, there cannot be a doubt that, whatever advantage the practitioner derives from iodine, is mainly due to the exertions of Dr. Coindet. The subsequent researches and successful experiments of this physician quickly introduced this remedy to the notice of the profession; and if it was not regularly admitted into the pharmacopœias of all the different countries of Europe, its efficacy has at least been submitted to trial in a very general and extensive manner. The physicians and surgeons of France, of Italy, of Germany, and of England, have since the publication of Dr. Coindet's memoirs in 1820 and 1821, been zealously occupied, in hospital or in private practice, in ascertaining the powers of iodine, and observing its effects; and though, perhaps, in some respects, it has been misapplied, and in others its virtues have been overrated, it cannot be doubted that it possesses strong claims to the attention of the bold and judicious practitioner.

Among a considerable number of writings which have appeared chiefly on its merits, and on its mode of administration in various forms, the three monographical treatises of Dr. Coindet, Professor Brera, and Dr. Gairdner, may be supposed to communicate very just views of the real merits of iodine and its preparations. Dr. Coindet's short treatise, as translated by Dr. Johnson of Bristol, consists of three memoirs, in which the history of its introduction, its several pharmaceutical preparations, its effects in the cure of goitre, and its influence on the economy in general, are clearly and correctly related. It is the most original, and, perhaps, the fairest and most perspicuous statement of the virtues of the remedy. The work of Professor Brera is part of the Report of his practice in the Clinical Institute of Padua for 1820-21. The author not only gives an

account of the different cases in which the remedy was tried, but has added a good history of the nature and properties of the remedy, its various preparations, and the formulæ according to which it may be suited to the purposes of the physician. We regard this as the most comprehensive, the most elaborate, and the most scientific account of iodine hitherto published,—and in every respect, except, perhaps, a shade too much of confidence in its powers, worthy of the character of the author. Of the third work we cannot speak so highly. It may indeed be styled, “An Essay, with Practical Observations,” as the author has entitled it; and, perhaps, we must admit that it contains one or two little things which some people would do well to know about the administration of iodine. Dr. Gairdner conceives, that, while the virtues of iodine have been panegyricized by all, its evils have been studiously concealed; and under this impression he has undertaken the task of delineating the horrors of *iodization*, and of execrating with becoming severity the rashness and ignorance of those men, who will administer a powerful and dangerous remedy without watching its effects. To this there can be no rational objection: but when Dr. Gairdner monopolizes, as he appears to do, the prescription of iodine, we should fear that many would be disposed to regard the publication of the small treatise before us, as little else than a civil hint to the public,—that, as iodine must be given to cure some diseases, it is unsafe to trust its administration to the common mass of physicians; and that no other but Dr. Gairdner is qualified to superintend its action on the living body. That the virtues of iodine are over-rated, that its use has been indiscriminate, we admit, and perhaps shall afterwards show; but we are not certain that Dr. Gairdner has any merit in pointing out this, or that he is the only physician who is aware of the abuses to which it is liable, or the means of restraining them.

Iodine may be obtained either from the *mother waters of the soda of vareck*, or from the *soda of vareck* reduced to powder, according to the directions of Wollaston. The mother waters, as they are termed by kelp manufacturers, are obtained by lixiviating the ashes of various kinds of sea-ware (*fuci*) which have been previously burnt, and by concentrating the liquor thus formed.

After Courtois had discovered this substance, Gaultier de Claubry, in 1815, ascertained its existence in many marine plants, and extracted it from the ashes of the sweet wrack (*fucus saccharinus*,) the sea-hangers (*f. digitatus*,) the bladder-wrack (*f. vesiculosus*,) the saw-tooth wrack, (*f. serratus*,) the pod wrack, (*f. siliculosus*,) and the sea-laces (*f. filum*,) Davy remarked traces of it in the ashes of the gristly wrack (*f. cartila-*

gineus,) the pellucid wrack (*f. membranaceus*,) the red proliferous wrack (*f. rubens*,) the thready wrack (*f. filamentosus*,) in the Turkey-feather laver (*ulva pavonia*,) and in the blistered laver (*u. Linza*.) The ashes of the saccharine or sweet wrack, are said to be the best, as a given quantity of them contains a greater proportion of iodine than the same quantity of any other maritime plant. The very extensive shores of Normandy appear to be the most favourable for the growth of *fuci*, from which iodine is to be obtained; Davy examined three specimens of alkaline ashes of marine plants from the shores of Sicily, Spain, and the Roman States, but without detecting any trace of iodine; and it is observed by Brera, that those collected on the coast of the Adriatic, in the neighbourhood of Capo d'Istria, where they are very abundant, furnish iodine only very sparingly. We have been further informed, that the kelp, or impure alkaline ashes obtained by burning the *fuci* of the Scottish shores, contain a very considerable proportion of this substance. It is unfortunate, however, that no exact researches to ascertain the positive quantity have yet been instituted.

Dr. Straub of Hofwyl states, that he obtained iodine from the ashes of turf, as it is burnt for domestic purposes; and he thinks it may be found to exist in peat.

Iodine obtained according to the usual chemical process, is a simple substance, analogous to chlorine, solid at the ordinary temperature of the atmosphere, of a grey black colour, which in a bright light verges to turkey-violet, of metallic brilliancy, slightly tenacious, and with an external aspect between that of native sulphuret of antimony and graphite. It sometimes assumes the appearance of small rhomboidal plates, broad, and splendid, but more frequently like pieces of various dimensions, resembling micaceous iron-ore. A mass of either, when broken, presents internally a laminar and unctuous aspect. Melting at 170° centigrade, and volatilizing at 175° centigrade, under the ordinary pressure of 76 centimetres of mercury, it is converted into violet vapours, which, when collected into a receiver, are again condensed in octahedral crystalline plates, the axes of which have been determined to be to each other in the ratio of 2, 3, 4. Its odour is disagreeable, like that of chlorine; the sensation which it leaves on the tongue is sharp, hot, and durable; it leaves on the skin a yellow stain, which readily disappears; but tinges white paper with a reddish white spot, which finally corrodes the part.

Iodine unites with oxygen and hydrogen, and forms substances with acid properties to which the names of *iodic* and *hydriodic* have been respectively given. The iodic acid combines with

the metallic oxides, forming iodates of potassa, soda, baryta, lime, zinc, &c. Professor Brera describes the mode of preparing these iodates, and their chemical and physical qualities, as he thinks the physician will hardly have occasion for more varied products. Any of these dissolved in water is found to be capable of uniting with an additional proportion of iodine, and thus forming *ioduretted iodates*.

The hydriodic acid combines in like manner with the metallic oxides, and forms hydriodates, which are more familiarly known than the iodates. The pharmacology of these salts given by Brera is very comprehensive, and, like that of the iodates, includes varieties which have not hitherto been generally known in medical practice, and which perhaps never will come into general use. After stating that the knowledge of the hydriodates is most important to clinical practitioners, because some have been used with the greatest success, and others promise to furnish precious therapeutic results, he limits the principal to the number of six,—the hydriodates of potass, of soda, of baryta, of lime, of magnesia, and of zinc. In point of fact, we believe none but the two first have been prescribed either in France or in England; and Professor Brera's pharmaceutic list contains no preparation of the others. It is unnecessary to dwell here on the chemical details of these several preparations. Better information of this description than any which we could give or transcribe, is found in the recent chemical works of Vauquelin, Thenard and Thomson, and in the Clinical Essay of Brera, now before us. All that we need say is, that it is a characteristic of all these hydriodates, that the watery solution of each is capable of dissolving a considerable quantity of iodine, and thus forming *ioduretted hydriodates* of their respective bases. The iodine, in these ioduretted solutions, appears to adhere weakly, for it is detached by boiling, or by mere exposure to air, when the iodurated hydriodate is undergoing exsiccation. It is further remarkable, that the iodine does not alter the neutral state of the hydriodates. These solutions acquire in the addition a red-brown colour, similar to that of the simple solution of iodine; and this is further regarded by Brera as a proof of the weakness of the combination. Whatever be the case, it is found by actual experience, that the ioduretted solutions of potass and soda are at once the most convenient and the most efficacious forms in which iodine can be administered.

Of the other combinations of iodine, Professor Brera informs us, that he has hitherto used only those of mercury; and that the ioduret of *amidon* (starch) is a preparation which may be useful, as it enables the physician to introduce iodine into the

system by slight dry frictions, practised in the manner of the mercurial ones of Clark, or the auriferous ones of the method of Westring.

The proto-ioduret of mercury is a green yellow substance, insoluble in water and alcohol, but changeable in light. It consists of 250 parts of mercury and 156.25 of iodine ; so that 8 1-10 grains of proto-ioduret contain 3 1-10 grains of iodine ; and one grain of iodine is contained in 2 61-100 of proto-ioduret. Its specific gravity is 7.150.

The deuto-ioduret of mercury is of a bright red colour, insoluble in water, but soluble in alcohol, ether, acids, and the alkaline hydriodates. It is formed by the union of 250 parts of mercury, and 312.50 parts of iodine, or 5 parts of mercury and 6 2-10 of iodine. One grain of iodine is contained in 1 84-100 grains of this deuto-ioduret. Its specific gravity is 4.685.

If *amidon* (starch) be treated with excess of iodine, and the mixture dissolved in potass, the addition of a vegetable acid is followed by a precipitate of a fine blue colour, which is ioduret of amidon. Amidon is the most powerful reagent for detecting the presence of iodine ; and Stromeyer of Gottingen states, that this substance, introduced into a fluid containing only 450-1000 or 9-20 of iodine, instantly attested its presence by the blue tint which it caused.

It appears, from the memoirs of Dr. Coindet, that he exhibited iodine in three different forms ; 1st, alcoholic or ethereal tincture of iodine ; 2d, ioduretted hydriodate of potass in solution ; and, 3d, in the form of *pommade* or ointment. The formulæ for these preparations are given in the Formulaire of Magendie. Professor Brera has given, in the present work, *formulæ* for pharmaceutical preparations ; 1st, of iodine ; 2d, of hydriodic acid ; 3d, of iodine in the form of hydriodate ; 4th, of iodine in the form of the mercurial iodurets.

Under the first head we find the four following preparations : 1st, iodic alcohol, or tincture of iodine, which is prepared, by dissolving 48 grains of iodine in one ounce of alcohol at 35° of Beaume's areometer, or .852 density. This preparation is evidently copied from that of Dr. Coindet, and it is therefore said, that 20 drops contain one grain of iodine. But, as the Poids de Marc ounce, which is used in Geneva, contains 576 grains, and the Troy ounce, which is used in almost all other countries, contains only 480, 48 Genevese grains are equivalent to 40 Troy, or, in other words, 1-12 of iodine by weight, and not 1-10, is to be dissolved in the ounce of spirit to make the proper tincture. 2d, Ioduretted sulphuric ether, formed by dissolving six grains of iodine in one drachm of ether at 66°,

giving one grain of iodine in 30 drops of the solution. 3d, Iodine pills, two of which are made by rubbing one grain of the substance with a sufficient quantity of *rob* of elder and liquorice powder. 4th, Iodine ointment (*Pomata di iodio.*) formed by rubbing half a drachm of iodine with 1 1-2 ounce of the purest lard.

The only preparation of the acid is hydriodic ether, obtained by distilling a mixture of two parts of alcohol, and one part, by volume, of hydriodic acid, at 1.700 density, until an alcoholic fluid, perfectly neutral and limpid, is perceived.

The preparations of hydriodate of potass given by Brera are as follows ; 1st, Solution of hydriodate of potass, formed by dissolving 36 grains of the salt in one ounce of distilled water. 2d, Solution of ioduretted hydriodate of potass, made by adding 10 grains of iodine, and 2 drachms of water, to the foregoing solution. The two drachms of distilled water are peculiar to Brera, for neither Coindet nor Magendie direct this, nor do we regard it as essentially necessary. 3d, Ointment of hydriodate of potass, by combining half a drachm of the salt with 1 1-2 ounce of lard ;—the same as Coindet's ointment, and the *pommade* of Magendie's formulaire. 4th, The ioduretted gastro-iodated ointment of potass (*Pomata gastro iodata di potassa iodurata.*) This polyonymous ointment is prepared by mixing one drachm of hydriodate of potass, and one scruple of iodine, with a sufficient quantity of depurated calf's gastric fluid, for digesting in 24 hours, and then rubbing the whole with a proper proportion of lard. This ointment, which has undoubtedly the merit of being original and sufficiently singular, is intensely yellow-red, and is said to be the most safe, mild and efficacious mode for the external application of iodine hitherto used.

Under the head of iodurets, we find, 1st, alcoholic solution of deuto-ioduret of mercury, obtained by dissolving 22 grains of the salt in 1 1-2 ounce of alcohol at 35°. This medicine acts energetically on the stomach ; and it should not be given at first in greater quantity than 10 drops at a time, which contain 1-16 of a grain of the deuto-ioduret. 2d, Sulphuric ether, with deuto-ioduret of mercury, made in the same manner as the last. And, 3d, Pills of proto-ioduret of mercury, eight of which are formed by combining one grain of the salt with a proper quantity of elder-*rob* and liquorice powder.

Of all these preparations, the safest, according to the observations of Coindet, is the ioduretted hydriodate of potass, and next to that the alcoholic or ethereal tincture. Brera employs not only these preparations, but iodine in the form of pill or bolus,

the alcoholic tincture of deuto-ioduret of mercury, and the gastro-iodate liniment, to which he is very partial.

It was in the treatment of goitre that Coindet observed the powerful effects of this remedy as an agent ; and he was led, perhaps too hastily, to infer, that it would have similar beneficial results in strumous swellings. It is remarkable, that this judicious physician was quite aware of the fallacious views which ally goitre and king's evil ; for he observes, that practitioners have been deceived by the name of *gland*, which has long been applied to that body, the enlargement of which constitutes the swollen throat (*tumidum guttur, gozzo*) of the Alps. Yet he afterwards informs us, that its powerful action on the absorbent system induced him to employ it in scrofula uncombined with fever, and where the enlarged glands of the neck were indolent. His own success, and that of several brother practitioners of Geneva, confirmed his views, and perhaps led to an extreme confidence in its powers. We understand, from the personal observation of a friend on whose accuracy we can place the utmost reliance, that while he was in Geneva last summer, it was by no means found to answer the sanguine expectations which were once entertained of its effects on the management of affections ascribed to the strumous disposition. We have ourselves witnessed several very good cures of scrofulous glands under its use ; but in most of them suppuration took place ; and it may be doubted, whether the iodine exercised its effects on the absorbent system, or enabled the organic vessels of the glands to assume a suppurative action of a more healthy character.

The Clinical Essays of the Paduan Professor contain thirteen cases of various kinds of disease, in all of which, except one, a cure was effected under the use of some preparation of iodine. One case of incipient mesenteric tabes, two cases of vicarious hæmoptysis, both in females with suppressed menstruation, one case, said to be vicarious dysentery, three cases of chlorosis, with a variety of symptoms, one case of amenorrhœa, one of difficult menstruation, two of enlargement of the submaxillary glands, ascribed to a scrofuloso-syphilitic taint, and one case of syphilitic bronchocele, were treated by this remedy with favourable issue. A desperate case of laryngeal consumption terminated fatally. We have not, at present, leisure to inquire into the circumstances of all these cases ; nor do we feel much inclined to scrutinize with severity the cases of the learned Professor.— But we should be rather sceptical with regard to the favourable effect of iodine on diseases like inflammation of the mesenteric glands, or pulmonary hæmorrhage. A letter from Dr. Francis Marcolini of Udina to Professor Brera, communicates the par-

ticulars of three cases of scrofulous glandular disorder, and one of goitre, treated successfully by this remedy. This is an example which may be recommended to those practitioners who reside in districts where glandular enlargements are frequent; and if their observations are accurate, the merits of the remedy might be determined without much chance of mistake.

An analogy, which has never appeared to us well established, and the truth of which has been admitted by the profession rather on the authority of doctrine and opinion, than on that of sufficiently extended observation, appears at present inclined to adopt the use of iodine in the treatment of consumption. The analogy to which we allude, is that supposed to exist between glandular scrofula or the strumous diathesis in general, and tubercular destruction of the pulmonic tissue. It would be an object of some consequence to the precision of pathological doctrine, to see this analogy confirmed or disproved; and it would be a much more happy circumstance, if it could be shown that iodine prevents the formation of tubercles, or removes them when formed. But not only is this improbable, we had almost said inconceivable; but there are circumstances in the action of iodine, which strongly and imperiously forbid its use in diseases in which the pulmonary functions are in the most trivial degree deranged. One of the effects of *iodization*, or that state induced by charging the system to excess with iodine, is painful constriction of the chest with some degree of cough and disordered respiration. This led Dr. Coindet to mention incipient diseases of the chest as one of the states in which the exhibition of iodine is contraindicated. Yet we find that Dr. Gairdner, amidst his affected discrimination of the proper use of this remedy, has employed it "in cases where he had good evidence of the presence of tubercles in the lungs, and that he does not doubt that it will be found serviceable in the incipient stages of the disease." We should like to know what this evidence was; and what circumstances lead Dr. Gairdner to recommend this remedy in incipient consumption, any more than in the advanced state. Medicine is unquestionably a science of observation, and an art of experiment; and we should be loth indeed to substitute *a priori* assertions and principles for the results and evidence of actual fact. But it is certainly not a proof of the closest adherence to consistency, for Dr. Gairdner to commence his work with strictures on the ignorant and indiscriminate practice of using iodine in all and sundry forms of intractable disease,—and to conclude it by telling the world that he has removed pulmonary tubercles by its exhibition, and that he thinks it serviceable

in the early period of consumption, when it is well known the symptoms of pulmonary irritation are considerable. Neither the evidence of Dr. Baron, nor that of the late Mr. Haden, are sufficient to convince us of the propriety or the safety of using iodine under such circumstances. We cannot perceive how the positive existence of tubercles can be ascertained, unless the lungs of the individual, destroyed by some other disease, were to present them or their traces after death.

On the whole, we regard it as established by the evidence of Dr. Coindet, that iodine may be used with benefit and success in goitre, especially that form of it which prevails in Switzerland, Piedmont, and the lower and maritime Alps; and that it may be advantageous in the treatment of some other indolent tumors, which are not very hard or tuberculated, whether they be a new formation, or consist in enlargement of glandular bodies already existing; but it still remains to be proved, that it can be administered either with safety or benefit in any process of internal disorganization; and certainly it ought not to be prescribed either in consumption or in any other tubercular disease.

We should have spoken more fully of that train of symptoms which result from over-charging the system with iodine; the *idiodic* symptoms of Coindet, or what has been named by Brera and others, *iodization*. But we must put a conclusion to this article, which is already too long,—and be satisfied by referring our readers to the Treatise of Dr. Gairdner, which contains an excellent and interesting case of this dreadful condition;—the best part of the Essay.

MONTHLY SUMMARY

OF PRACTICAL MEDICINE.

I. ANATOMY AND PHYSIOLOGY.

DR. CARSON on the circulation in the Brain.

In our number for May we gave an extended account of Dr. Kellie's paper on *the circulation in the brain*, and we have now to notice a very interesting communication on the same subject, by Dr. Carson, of Liverpool. This gentleman adopts the opinion (concerning the accuracy of which, we conceive, little

doubt can be entertained,) that, as the limits of the cranium are fixed, the quantity of its actual contents must be always the same, although many variations may occur with respect to the relative proportion of fluid and solid parts. It is obvious, however, that, as the substance of the brain cannot during life undergo any very sudden change, so these variations must principally regard the fluid contents,—that is, the relative quantities of blood in the vessels, and of water in the ventricles. Neither, however, can this last be regarded as subject to much change in the healthy state of the body; and, if we thus suppose two of the three constituent parts of the contents of the cranium remain the same, by what means is the alternate entrance of the third into the brain, and its removal therefrom, to be accomplished? To the solution of this difficulty, Dr. Carson applies the resiliency of the lungs, a principle of which he has formerly made such ingenious use. He supposes a portion of the atmospheric pressure to be removed from the blood, at the ends of the sinuses communicating with the veins outside the neck, by the dilatation of the heart and the resiliency of the lungs having a constant tendency to increase the capacity of the veins within the thorax. But this abstracting power, although generally aided by gravity, is insufficient to suck out the blood from the head, except at the moment when the arteries, by their contraction, are ready to introduce a quantity of blood into the head, equal to that which the veins are endeavouring to abstract, and thus the blood is equally circulated through the whole head. It has been common to attribute the phenomenon of the pulsation so frequently observed in the jugular veins, to the impulse communicated to them by the contiguous arteries; but, according to the view just given, a very different explanation presents itself: for, as it is contended that the arteries convey the blood to the head in synchronous jets, and that at the same instant, and then only, the veins are enabled to abstract it, so it is obvious that a succession of currents must pass through the veins, whose alternate dilatation and collapse give rise to the phenomena in question.

These views, as well as those of Dr. Kellie above alluded to, suppose the quantity of blood within the cranium to continue always the same, while the other contents remain unaltered. We now come to a different proposition. It is generally admitted that, in particular diseases, the substance of the brain is more or less wasted; and this must give rise to an increase of one or both of the other contents of the encephalon,—probably, for the most part, to the latter. Supposing the blood to be increased in quantity, it is obvious that there must be a limit to this accu-

mulation, as the vessels cannot be supposed capable of unlimited distention. Now, the object of Dr. Carson is to show that the use of the ventricles is to guard against this danger, by affording receptacles for water, by which the space that would otherwise be a void is conveniently filled up, without rendering it necessary for the vessels to become too much enlarged.

“On the dissection of bodies reduced to great emaciation by disease,” says Dr. Carson, “the vessels of the head are found to be turgid, the substance of the brain to be soft and to contain an unusual quantity of blood, and the ventricles to be greatly distended with water. Sometimes, in such cases, the quantity of water contained in the ventricles is very considerable; ten ounces is by no means uncommon. Suppose there had existed no receptacles for water, such as the ventricles, and the brain to have been wasted to that degree by which room was afforded for the admission of ten ounces of water into the encephalon, the blood-vessels of the head must necessarily have been loaded with ten ounces of blood, in addition to the quantity which they already possessed, and by which they appear to have been already too much distended. Long before they could have been distended to the capacity necessary for the admission of so great a quantity of blood, their coats must have given way, and a fatal hemorrhage ensued; or, at all events, they must have been too much surcharged for the performance of their functions. Hence, we readily perceive the important uses of the ventricles. By becoming the receptacles of a mild fluid, they, in certain circumstances prevent the blood-vessels from being over-distended. By their greater or less expansion, they become the grand regulators of the circulation of the blood through the head. Water in the ventricles, in such circumstances, instead of being considered a disease, is in reality the great remedy provided by nature for the preservation of life, in situations in which it could not otherwise exist. It is the defence set up by nature for the protection of the breaches or weak points which may exist in this part of her works.

“The ventricles of the brain, in consequence of their irregular course, are admirably situated for enabling the substance of the brain to assume that variety of position necessary, as circumstances alter, to give due support to the vessels of the head, without sustaining at any point a disproportionate distention. But, to perceive this sufficiently, the brain itself must be examined.”

These views of the subject appear to us highly interesting and satisfactory. We think it is extremely probable that, when any portion of the brain is removed, it may give rise to synchronous

and corresponding distention of the blood-vessels; and that these, being thus distended to a certain extent, and for a certain time, may relieve themselves by serous effusion into the ventricles. So, on the contrary, if the quantity of the solid substance of the brain be increased, little water will be found in the ventricles; the space assigned to the blood-vessels is encroached upon, it may be, to such an extent as not to leave sufficient room for its circulation: hence, though unable to gain admission, the blood is driven to the external parts of the head, and gives rise to that redness of the face and appearance of fulness about the head which characterizes those predisposed to apoplectic seizure.—*Lond. Med. and Phys. Jour.*

II. SURGERY AND MIDWIFERY.

M. GRAEFE'S *Case of Ligature of the Innominata.*

This operation was undertaken for the relief of an aneurism of the brachio-cephalic trunk, attended with excessive pain and suffering, and increasing in such a manner as to render death inevitable. The mode of operation is not minutely described, but Dr. Graefe says, that after making an incision in the neck, he pushed the cellular substance aside, so as to get behind the sternum, and by means of a blunt hook, passed the ligature round the vessel, (which was about as thick as a finger,) one inch from the arch of the aorta, and about two from the heart. The operation was completed in a few minutes, and though performed in the midst of some of the largest vessels in the body, no more blood was lost than that which stained the fingers and instruments. Immediately on tightening the ligature, the pulse ceased in the arteries of the right arm, in the right carotid and temporal arteries. At the same time the throbbing in the aneurism stopped, and it became flaccid. The patient felt himself much relieved, and not the slightest disturbance of any function took place, as might have been expected from an operation which intercepted so large a portion of the current of blood issuing from the heart. Under the most simple treatment the patient was so much relieved from all his sufferings, and so perfectly well, that not any of the many experienced professors who examined him doubted the high probability of his recovery.—Several weeks after the operation, when the incision was almost wholly healed, bleeding took place at different intervals, rendering recovery doubtful. Having ceased, hopes were again entertained, until the symptoms again made their appearance, and in

the end the patient died on the 67th day, consequently more than two months after the operation. Hurt as he felt by the loss of a patient who had happily got over so many dangers, Dr. Graefe regrets that he did not undertake the operation at an earlier period, and that he postponed it to the employment of other measures usual in such cases. Dissection shewed that the cure was nearly completed by deposition, within the aneurismal sac. The arteria anonyma was closed below the point of ligature by means of a thrombus. The brain and right arm were supplied with blood by anastomosing vessels. In spite of the unfortunate want of success which has hitherto attended this operation, Dr. Graefe expresses his conviction of its propriety, and ultimately favourable result. The description of the operation, the detail of symptoms, and the account of the preparation of the parts made after dissection, are more fully treated of in the work from which this account is extracted.—*Anderson's Quarterly Journal*.

DR. ARENDT on *Ligature of the External Iliac Artery*.

This case bears ample testimony to the advancement of operative surgery in Russia. In the first he tied the external iliac artery, in a strong man aged 44, two inches from its origin, for the cure of a femoral aneurism, as large as a child's head, including a third of the thigh, extending five inches above Poupart's ligament, appearances of an approaching rupture of the sac having already shewn themselves. He made an incision in the integuments seven inches in length, and nearly parallel with the crista of the ilium. He found some difficulty in passing the ligature from the depth of the wound, and the firm connection of the artery to the neighbouring parts. A slight pulsation returned in the swelling a few hours after the operation, and on the day following became so considerable that Dr. Arendt thought it proper to compress the artery, which he effected by passing the ends of the ligature through a piece of cork, and then through a silver tube to the extremity of which they were fastened; the pulsation ceased directly.—On the second and third day, however, it again returned slightly, superficial gangrene of the most prominent part of the tumour occurred, and on the 14th day Dr. Arendt made an opening into it, to permit the escape of its contents; from that period the case proceeded uninterruptedly to a favourable termination. We may remark, that Dr. Arendt does not appear to have been aware that after the operation for aneurism, pulsation occasionally returns in the sac by means of the

anastomosing branches opening into it, or immediately below it, or between it and the point at which the ligature is applied.—It is seldom, however, or perhaps never, sufficiently forcible to justify any apprehension of the return of the disease. For the same reasons we are much inclined to question the efficacy of the compression afterwards applied.—*Anderson's Quar. Jour.*

DR. BOWEN on *Hyalonyxis*.

The term *Hyalonyxis*, is applied by Dr. Bowen to a new operation proposed by him for the removal of every species and variety of cataract. Dr. Bowen states, in his work on this subject, that he has performed this operation upwards of one hundred and sixty times during the last four years of his residence in Italy. He also assures us, that thirty of thirty-one patients have been restored to sight by this mode of operating. Inflammation is of rare occurrence, provided proper precautions are used.

The operation is thus performed, three or four hours previous to which the patient's eyebrows should be rubbed with some of the extract of belladonna, rendered soft by the addition of a little boiling water :

The patient being seated, so that the superior part of the head does not reach higher than the superior part of the sternum of the operator, he takes his needles, previously besmeared with oil, as a pencil or writing-pen, placing the weight of his hand on the cheek of the patient : this produces two very considerable advantages ; first, it steadies the hand ; second, in the event of the patient's moving, the hand preserves its relative position with respect to the eye, so that any movement of the patient's head can be of no importance to the surgeon. The patient being directed to turn the eye towards the nose, the needle, with its convex surface* forwards, corresponding with the iris, is boldly introduced into the globe of the eye, through the sclerotic, three lines or three and a half from the transparent cornea, and a line below the transverse diameter of the pupil, to avoid wounding the ciliary artery, which pursues its course to the iris between the sclerotic and choroid coats, along the middle of the external convexity of the eyeball. If introduced at or below

* To avoid still more the wounding of the ciliary nerve or artery, the needle may be introduced with its cutting edge corresponding with the iris ; and after having entered the eye, to be turned round with its convex surface forwards, and continued as we have before described.

this point, you avoid all effusion of blood. The instrument passes into the vitreous humour posterior to the lens and its capsules : the point of the needle is then brought forwards, from inclining the hand to the temple, and penetrates the posterior capsule.

Should the lens be soft or fluid, the needle passes through its centre on its passage to the anterior chamber ; if solid, the instrument should be directed to its superior part, and by gently elevating the handle, the lens will be sufficiently depressed to allow the instrument to pass between it and the ciliary processes ; it is then carried through the anterior capsule and pupil, (which latter has been previously dilated with the belladonna) into the anterior chamber, without any risk or danger of wounding either ciliary ligament, iris, or ciliary processes. The object the operator has in view is the laceration and removal of a large portion of the anterior capsule, that is to say, of greater extent and diameter than the pupil, in its natural, most dilated state. This is effected by three or four circular movements of the point of the needle, which should invariably be done. If the capsule be transparent, the inexperienced operator will scarcely be sensible of effecting any good or change by this circular movement of the needle.

The correspondence in transparency and colour to the aqueous humour is so similar, and the former so delicate, that no resistance to the needle is visible to the fingers, when the point is breaking down, and removing from the axis of vision the membrane, so frequently the cause of secondary cataract. When the capsule is opaque, the effects of the needle are of course evident : the transparent or opaque portions should be conducted backwards and downwards with the lens, and buried in the vitreous humour, below the margin of the iris, and as much as possible removed from the pupil ; or retiring and withdrawing your instrument, a circular movement is similarly made with the point, for the purpose of removing every portion of the posterior capsule, which is also liable to opacity ; so that a communication is completely established between the aqueous and vitreous humours. The anterior capsule, lens, and posterior capsule, are now removed ; so that the utter and total impossibility of secondary membranous cataract forming, must be evident.

Such is the operation for a solid cataract enveloped by its capsule ; but the lens we meet with at least seven in ten cases, is either fluid, semisolid, or curdy. When the instrument, therefore, penetrates the anterior capsule, and the operator commences his delicate circular movement, the aqueous humour becomes cloudy or discoloured, which is the passage of parts of

the diseased lens into the anterior chamber, where its absorption is more rapid than in the vitreous humour.

The views of the operator are the same : instead of quickly finishing the operation, the solid particles of the lens should be removed by several movements of the needle as much as possible from the axis of vision, either by depressing them into the vitreous humour, or bringing them into the anterior chamber. The free movements of the needle, and removal of the capsules into the aqueous or vitreous humours, as we have above described, ensure the success of the operation.

The great desideratum in the fluid cataract is the laceration and removal of the capsules from the axis of vision ; for in all cases where a free communication is once established between the aqueous and vitreous humours, absorption goes on, and your cure is almost certain.

We have now described the removal of the lens in two different states : there only remain some observations on the third.

I have occasionally met with the lens united firmly to both capsules, forming as it were only one body. These cataracts, from their size and appearance, are easily distinguished from what Scarpa very properly termed pumary membranous cataract, which is the wasting of the crystalline without its capsule, which appears contracted and more opaque in its centre than common cataracts. The most correct account, however, we have of this variety, is from the late Mr. Saunders of London, published by his friend and colleague, Dr. Farre, an eminent physician. These cataracts are for the most part congenital ; and although Scarpa represents them as rare, are not uncommonly met with in children. When the lens in these cases is absorbed, the anterior lamella of the capsule unites itself to the posterior, until they form one membrane, which is white, opaque, and elastic : this membrane is absorbed after puncture with the needle and partial laceration. A most interesting account is given by Mr. Saunders, with their removal in children.—*Med. and Phys. Journal.*

MR. TOONE on the *Influence of the Maternal Imagination on the Fœtus.*

I beg to be permitted to offer a few remarks upon the much disputed point of the influence of the imagination in pregnant women, and the effect of external impressions on the fœtus in utero.

The extent to which many women for interested purposes, and others from ignorance, are disposed to carry the idea of this susceptibility, is unwarrantable, and often truly mischievous ; yet, on the other hand, it can scarcely be denied, that during pregnancy, the imagination does, in some cases, seem to exercise a very extraordinary influence upon the formation of the child, and that this is occasionally very materially affected by external impressions. Indeed, from circumstances which have occurred in my own practice, so strongly is this opinion entertained by me, that whenever the mother, during the period of gestation, has related any remarkable transaction which has been forcibly impressed upon her mind, or any accident of an extraordinary nature which has befallen her, I have seldom been mistaken in my expectation of some defect or malformation of the child. The following cases are selected to illustrate the foundation of this opinion :—

Mrs. D., of B., when far advanced in her first pregnancy, was accidentally passing at the moment when a child fell under a waggon, the wheels of which went over it, fracturing both arms, both legs, and so severely injuring the trunk, as to cause its almost instant death. The little sufferer was taken up in her presence, with its mutilated limbs dangling uselessly from it.—She was most violently affected by the accident ; and, after some time, was delivered of a daughter, whose limbs were at the moment of birth, and have subsequently (after a lapse of twenty-five years) continued to be, in a state of laxity and perfect uselessness, precisely similar in appearance to that of the injured child.

Mrs. B., of Fisherton, was alarmed during her pregnancy, by going to answer a knock at her door, from one of the Italian itinerant showmen, who thrust the hind part of a racoon nearly in her face. On delivery, her child had extensive spina bifida, with peculiarly emaciated buttocks and lower extremities.

Mrs. N., of Catherine Street, was standing at her door, during the passing of an election cavalcade, when a girl of the town, with a most terrific harelip, thrust her face nearly into contact with that of this lady, who fainted from the shock. Some months afterwards, she was delivered of a remarkably fine and well-formed child, with the exception of a deep harelip.

Mrs. C., of Endless Street, returning home one evening, in about the seventh month of her pregnancy, missed the bridge before her door, and fell into the water : the inconvenience which she felt from the fall was slight. On delivery, the ossification of the parietes of the cranium was so imperfect, that a congeries of small detached portions, like lentils, was alone per-

ceptible. The head and neck of the left thigh-bone were also separated from its shaft, in the centre of which another fracture was discovered. It is worthy of remark, that the father of this child was born in precisely the same state, as to the thigh, which has been subsequently frequently fractured anew.

I leave these facts for consideration. The first case is authenticated by an intimate acquaintance with the family in which it occurred, and the rest came immediately under my own notice in the whole of their progress.—*Lond. Med. Rep.*

III. PATHOLOGY AND THERAPEUTICS.

DR. CRAMPTON on *Tinea*.

The treatment which I finally adopted was, first to use poultices, giving cathartics every second morning, and the warm bath every third evening; during the time the poultices were discontinued, the liniment with lime-water and oil was applied. When the common oatmeal poultice was not sufficiently strong to remove the crust, one was constructed with soap reduced to a stiff jelly; the common soft brown soap answered best. The soap poultice was productive of rapid amendment; it very quickly dissolved and removed all hardened, lymphy, and other morbid secretions. Ultimately the lime-water liniment seemed to keep the teguments of the head soft, to prove healing, and to encourage the growth of hair. Mr. Plumbe advocates the expediency of extracting the hairs with a forceps where suppuration has taken place about their roots; he considers it quite impracticable to succeed without this step. This in any of the twenty-eight cases under my care, appeared unnecessary; the poultices removed all collections of matter, whether superficial or deep seated, and allowed the cranial teguments to regain their healthy condition.

All the twenty-eight cases were cured except two of *porrigo decalvans*, some sooner, some later, but all within six months.—*Edinburg Transactions.*

M. PORTAL'S Case of Dropsy of the Pericardium.

A milliner, twenty-eight or thirty years old, for a long time subject to infarctions in the glands of the neck and left arm-pit, and also to herpetic eruptions on different parts of the body

had been likewise very subject to obstinate ophthalmia, with œdematous swelling of the eyelids and face. M. Rouland, the surgeon in attendance, treated her with ptisans of the stalks of woody night shade, and the summits of forest scabious, sweetened with syrup of fumitory. She had also taken, for a long time, the pilis of Belloste, and blisters had been used at different times, and for the last ophthalmia, which had been very obstinate, a seton had been inserted into the back of her neck, and with benefit. During the preceeding spring the herpetic eruptions, which were much more distinct than formerly, continued ; but six months afterwards, in the summer of 1815, the patient was seized with cough and difficulty of breathing ; and she complained of great thirst, which was no ways lessened by the demulcent drinks prescribed for her. The action of the heart was much stronger than natural, and irregular. There was also a remarkable pulsation in the carotid arteries, particularly the left ; the pulse had intermitted ever since the menses had become scanty, and there was a remarkable tumour in the left hypochondrium, which seemed to be occasioned by the spleen pushed down into the abdomen by the left wing of the diaphragm. The left hand, the wrist, and the fist, were in some degree, œdematous ; but, for a short time past, the left arm had been enormously swelled by water infiltrated into its cellular texture. So rapid a progress of the disease, joined by increased dyspnœa, was very alarming, and the more so, that the corresponding side of the chest soon became œdematous. The heart was affected by a kind of tremor, and the difficulty of breathing was extreme. The patient meanwhile, could lie only on her back, a little more inclined to the left than the right side. The urine was scanty and dark coloured ; the face dark, particularly the region of the cheek bones ; the pulse was slower than it is naturally, and large and unequal, but not hard. Such was the state of the patient when M. Rouland called me to see her. I found her in danger of immediate suffocation, unless something were done instantly to relieve her. From the symptoms, I suspected that dropsy of the pericardium was the predominant disease. I advised the application of a large blister to the region of the chest, corresponding to the heart, and at the same time, fifteen leeches to be put to the external parts of generation, and to the thighs. I prescribed a mixture to be given in spoonfuls. It consisted of two drachms of gum ammoniac, one ounce of oxymel of squills, and four ounces of distilled water of hyssop ; and to each dose, four or five drops of the tincture of digitalis were added. The blister very soon produced a considerable discharge of serum, and the leeches furnished a

copious discharge of blood ; and, favoured by these remedies, the mixture procured a progressively increasing expectoration. The breathing was now easier ; the urine became more abundant and clearer ; and there was also a discharge from the bowels, which was kept up by glysters, prepared with a decoction of dog-grass roots and wall-pellitory leaves, and three drachms of mineral crystal, and two ounces of mercurial honey. In this way, not only was the progress of the disease stopt, but the patient placed in a much better state. In order to prolong the discharge of serum, externally, and to facilitate the evacuation of water from the pericardium, I recommended the establishment of a seton upon the chest opposite to the left lateral part of this cavity a little in front, towards the place where the pericardium forms a somewhat rounded angle to lodge the apex of the heart. I prescribed at the same time pills of calomel, squills, and digitalis, with a diuretic potion, to be continued for a longer or shorter time ; and this treatment had the happiest effects. The urine continued to flow abundantly, the bowels were open, the breathing became easy ; the pulse regular, and the patient was cured of a dropsy of the chest, to all appearance seated in the pericardium.—*Anderson's Quarterly Journal.*

MR. SWAN'S Case of Chorea.

Master Toynbee, æt. 9 years, had for the last three months been losing his flesh and spirits, and his arms had become very weak. About the end of September 1822, he was seized with chorea, which affected almost every muscle of the body. He took submuriate of mercury and purging medicines, as his bowels were very much constipated, and his stools black. He complained much of the back of his head. His appetite was various. The feces resumed a proper appearance, but he still continued costive ; and the chorea continued unabated. On the 17th of October, a blister was applied to the lower part of the back, which immediately diminished the motions very much ; and after the application of a second blister about the 24th, they entirely ceased. He remained very weak, and his left arm and leg were nearly paralytic, and he had very great pain on attempting to move them. There was not the least swelling in either limb, and the pain seemed very much like that of tic douloureux ; and pressure on their nerves produced great pain. He took ten grains of carbonate of iron, and ten grains of powdered bark, three times a day for a fortnight. Under the use of these

medicines the pains and paralytic affection gradually left him, and he has regained his perfect health.—*Edin. Med. and Surg. Journal.*

M. GASPARD'S Case of Rabies, treated by Injections into the Veins.

In December 1823, J. F. Guillemin, a farmer, was bitten in the right hand by a rabid wolf. As he had no knowledge of the rabidity of the animal at the time, the wound was dressed without previous cauterization or excision of the lacerated parts, and healed quickly. He followed his usual occupations, experiencing, however, some degree of dread on leaving his house at night. Five weeks after the wound was received (on the 14th January, 1824,) he began to feel some pain at the back of the neck and in his shoulders, with slight fever, and rigors. On the 15th, at night, he was seized with horror on attempting to drink some water. On the 16th the hydrophobia was constant, and all the usual symptoms of the disease present. On the 17th, Dr. Gaspard saw him, in consultation with Dr. Petiot, when it was agreed to try the experiment formerly made by M. Magendie, of injecting warm water into his veins. Having exposed the cephalic vein of the right arm, Dr. G. injected, very slowly, about four ounces of warm water, inquiring of the patient, in the course of the operation, if he felt any particular sensations.—After the injection of four ounces of fluid, he complained of a tickling and pricking feeling in the whole interior of his chest, although the pulse had suffered no change, either in frequency or fulness. No farther inconvenience having been experienced at the end of a quarter of an hour, M. Gaspard injected, in an equally slow manner, other four ounces of water, which did not increase the sensations complained of, nor did it accelerate the pulse; the pulse was however more full. Thirst and hydrophobia were undiminished, as were all the other nervous symptoms of the disease. M. Gaspard now waited another quarter of an hour, when the patient began to complain of vertigo, of great lowness, with nausea, coughed several times, and immediately afterwards experienced severe rigors. His pulse became very small and frequent, and his body pale and cold, as on the accession of a severe paroxysm of ague. To these symptoms, which continued about half an hour, a hot and a sweating stage succeeded. The three stages of the paroxysm continued about an hour and a half. In other respects the hydrophobic disease remained without the least modification.

The severity of these symptoms prevented M. Gaspard from attempting to inject a greater quantity of warm water : he therefore abandoned the patient to the use of opium. During the night, eight hours after the experiment, the patient experienced another similar paroxysm of fever, with slight delirium and trembling of the tongue and limbs, and the frequent spitting of a frothy mucus. After a frequent discharge of this species of expectoration, he ceased to have any horror at the sight of water, and even drank twice without any pain or repugnance ;—a phenomenon remarked in the cases published by M. Trollet and others. With the disappearance of the hydrophobia, convulsive and other nervous symptoms increased ; the delirium became at times furious ; he menaced the attendants ; and, at last, at six o'clock of the morning of the 18th January, the energy of the system was extremely low—the extremities cold—the pulse scarcely sensible—the muscles of the face agitated with spasms—and the mouth continually filled with a frothy mucus. He died soon after the supervention of this state, and 54 hours after the appearance of hydrophobic symptoms. The body was not inspected.

The following experiments, to which M. Gaspard refers, were made on a young man in Gaudaloupe, aged about twenty years, for an affection of the skin, and published at Leyden, in an inaugural dissertation, in 1778, by M. Regnaudot.

1st, The 27th of January, half a spoonful of a weak infusion of the leaves of senna, injected into the median vein of the arm, caused only a short and slight headach.

2d, On the next day, an injection of an ounce of the same infusion, occasioned, in the space of half an hour, a violent rigor, followed by heat, some vomiting, and several alvine evacuations. The paroxysm of fever continued nearly eight hours.

3d, The 29th of January, three ounces of an infusion of two drams of the bark of guaiacum, with forty-eight grains of isinglass, injected into the veins of the same individual, produced, as in the former experiment, in the course of half an hour, a very long febrile rigor, followed by intestinal colic and two evacuations. The paroxysm of fever continued more than nine hours, and terminated with a very copious sweat.

4th, Finally, on the 30th of January, this physician injected into the vein of the same man three ounces of water, holding only in solution two drams of gum arabic. About an hour afterwards the febrile rigor appeared, with a small and frequent pulse. He had three alvine evacuations. A hot stage succeeded the rigors ; and the febrile action terminated by a copious perspiration, fifteen hours after the injection.

It will be remarked that, both in these experiments, and in the one performed on the hydropobic patient by M. Gaspard, the injection of the fluid was immediately followed by a regular febrile paroxysm. This effect did not follow the experiment of M. Magendie, wherein two pounds of warm water were injected into the veins of a patient labouring under febrile delirium, in the Hotel Dieu ; but in that particular instance vascular depletion to a considerable extent had been shortly before employed. May not the paroxysms of fever, noticed in the other experiments, arise, in M. Gaspard's case, from the sudden repletion of the vascular system ; and in the experiments performed at Gaudaloupe, from the presence of an irritating cause circulating in the blood ; the continuance of the paroxysms holding a close relation with the quantity and nature of the substances injected ? Do not, also, these experiments point to some novel ideas respecting the nature of intermittents, which it is unnecessary to particularize at this place ?—*Lond. Med. Rep.*

IV. MATERIA MEDICA AND PHARMACY.

RASORI on the Treatment of Peripneumony by Tartar-Emetic.

The following is an abstract of the most authentic account yet published of the present Italian mode of treating peripneumony by large doses of tartar-emetic. It is taken from the translation of a memoir by Rasori, professor of clinical medicine at Milan, and one of the most strenuous advocates of the system. Rasori considers, that the capability of enduring large doses of tartar-emetic, without the supervention of vomiting, or the other customary signs of its action on the alimentary canal, is peculiar to the diseased state of the system ; and, consequently, as soon as the system begins to return to its healthy condition, the peculiarity ceases, and the drug acts in the usual manner, even in the usual small doses. The state of the system, which imparts this peculiarity, he considers a peculiar diathesis. It varies in force, both in different peripneumonies, and at different periods of the same case ; and in general it follows the course of the disease, increasing and diminishing as it increases and diminishes, and finally disappearing with it. Hence the dose, in which the remedy must be used, is very various ; and, on that account, he always commences with small doses, and goes on increasing them as long as they do not cause nausea. *But the smallest dose with which he ever commences the treatment of a case is twelve grains*

during the day, and as much during the night ; and if the disease has previously made some progress, he administers a scruple or half a drachm at once. As the disease goes on increasing, the doses must be augmented. The practitioner, on the other hand, must not always diminish the doses when the disease begins to abate. For the capability of enduring large doses sometimes continues, although the symptoms diminish ; and in that case, if the remedy is not kept up to the full extent, the symptoms will be again aggravated. In fact, the doses must be regulated, not by the state of the disease, but by the power the system possesses of resisting them ; they should not be diminished till they begin to excite nausea, or other signs of intestinal irritation. Occasionally, he remarks, the diathesis decreases, though some of the severe symptoms, particularly the dyspnœa and affections of the mind go on increasing. In such cases he uniformly found that in the lungs, organic changes were going on, which were the immediate forerunners of death. The salutary effects of tartar-emetic are not owing to its emptying the stomach, or acting as a diaphoretic, or giving a *salutary succussion* to the viscera of the chest and abdomen. It is owing to a true counter-stimulant action, (like that of digitalis.) which may produce its effect in subduing the *diathesis of stimulus*, without causing any sensible evacuation. But it is a remedy much more appropriate than digitalis, which, besides being too irregular in its action, is also too dangerous in its effects, when carried farther than the inflammatory diathesis enables the system to endure it. Rasori has seen the tartar-emetic produce rapid diminution of the pulse, like digitalis ; but he never observed a reduction under 50. In many cases the treatment of peripneumony may be entrusted to the tartar-emetic alone. But frequently also it is requisite to conjoin general blood-letting ; for the disease may have advanced so far, or may be advancing so rapidly, as to threaten the pulmonary tissue with speedy destruction ; and then it would be dangerous to wait so long as is generally required for the action of the remedy to be fairly established. Other reasons of convenience likewise render blood-letting frequently advisable where it is not absolutely necessary. At the commencement of the paper, the author remonstrates with much earnestness against the unwillingness of his countrymen and others to believe the statements which had previously gone forth into the world regarding his singular practice. “ My novel and daring mode of administering tartar-emetic,” says he, “ so astonishes the physicians, who, for the first time, witness it in my Clinique, that they question the proper preparation of the medicine, or the punctuality of the patients in taking it. Some have removed their

doubts by procuring a part of it, and subjecting it to chemical analysis, or administering it to their own patients, or taking it themselves ; and others have become convinced by seeing my patients take it, or actually administering it with their own hands, and then waiting in vain for its usual emetic effects." The translator of the memoir bears witness to these facts, having himself been at one time in the ranks of the incredulous ; and having become satisfied of Rasori's statements, by analyzing the drug used by him, and administering it to other patients.—*Edin. Med. and Surg. Journal.*

DR. SHERIDAN on *Ipecacuanha* in *Hæmatemesis*.

A late volume of the Dublin Transactions contains several examples of *hæmatemesis* successfully treated with *ipecacuanha*, by Dr. Sheridan, who says—"These cases, with the two others which I observed in the country, have made such an impression on me, that I never can hereafter hesitate for a moment to have recourse to the ipecacuan emetic in *hæmatemesis*. I do not mean by this term a mere vomiting of blood, which may be produced by various causes, and in some cases of which emetics might prove very prejudicial, but the true *hæmatemesis*, which I think will always be sufficiently distinguished by the symptoms which have been above described."—*Lond. Med. and Phys. Journal.*

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NO. III.

ART. I. *Observations on the Functions of the Absorbent System.*
By JONATHAN KNIGHT, M. D.

The object of this paper is to prove that the absorbent system is designed to convey to the blood, those substances only, which are found in the cavities of the body ; and that the gradual and constant removal of the solids, is effected by the action of the veins. The arguments are, that we have no direct proof of the absorption of solids by the lymphatics—that the veins do absorb

a portion of the solids—that the action of the lacteals is confined to the fluids—that diseases of the lymphatics affect only the cavities of the body—and lastly, that the situation of the lymphatics, and the analysis of lymph are in favour of Dr. Knight's opinion.

ART. II. *Observations on Fractures of the Os Femoris, with Cases, &c.* By LUKE HOWE, M. D.

The apparatus of Dr. Howe, consists of a pulley attached to the foot-piece of the bedstead. A gaiter, a counter-extending band attached to the "head-board," and a cord passing from the gaiter to the pulley, and having a weight attached to its extremity. By this weight, extension is to be made, and the degree of extension is to be varied according to circumstances by varying the size of the weight.

The foot of the bed is to be elevated from four to eight inches, according to the degree of extension necessary to be made.

ART. III. *Case of Bronchotomy.* By CALVIN JEWETT, M. D.

This case says Dr. Jewett, "is not presented as being new, it having occurred frequently in the United States, and the operation has been successful, in most, if not in all cases, when recourse has been had to it in due season."

ART. IV. *Cases of Sore-throat and Fever.* By E. HALE, JR. M. D.

In this paper are related several cases of sore-throat and fever, occurring to the attendants of a patient who sickened and died, after several weeks of great suffering from a burn.

ART. V. *Description of four native species of the Genus Cantharis.* By THADDEUS WILLIAM HARRIS, M. D.

The four native species of cantharis described by Dr. Harris, are *Cantharis Vittata*, which is found in abundance on the Potatoe, *C. Cinerea*, or ash-coloured *Cantharis*, found on the Windsor bean, and Indigo weed, *C. Marginata*, found frequently on the Clematis, and occasionally on the *Ranunculus bulbosus*, and *C. Atrata*, or black *Cantharis*, which is found on the different species of *Solidago*. They all possess blistering properties, and may be employed instead of the *C. Vesicatoria* of the shops.